

Air Conditioning & Refrigeration News

The Newspaper of the Industry

VOL. 28, NO. 6, SERIAL NO. 551
ESTABLISHED 1926Copyright, 1939, by
Business News Pub. Co.Trade Mark Registered U. S. Patent Office.
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DETROIT, MICHIGAN, OCTOBER 11, 1939

Entered as second-class
matter Aug. 1, 1927

Written to Be Read on Arrival

ISSUED EVERY WEDNESDAY
\$4.00 PER YEAR

IN THIS ISSUE

Ranges and water heater sales have jumped in recent years, but they're still not up to the hopes of most dealers—and manufacturers. Jack Poteat tells what should be done for a "sales speedup." Page 3.

What about the benefits of air conditioning to people? Are they actual, or have they been overhyped? A doctor who has done research on the subject tells what such benefits are and can be in a report published on page 4.

Do refrigerator prices need to go lower to meet the low-income market? The editorial on page 8 gives some answers to this question.

These new ultra-violet lamps for meat storage will help to make steaks tender quickly, but refrigeration is still needed. The story of the "Tenderizing" process will be found on page 7.

What about "leased" appliance departments in department stores? A drygoods store executive tells the "ins" and "outs" of the leased department matter on page 13.

The correspondence continues to flow in about the correspondence school graduate's place in the business. You'll find some "straight-from-the-shoulder" letters on page 10.

Having trouble with "flood backs?" The problem gets a thorough going over in a series of articles which starts on page 12 of this issue.

Distributor-dealer doings, page 9. Useful service data and suggestions on pages 11 and 15. Parts jobbers news on page 16.

Manufacturers Offer Suggestions To Leagues On Promotional Work

NEW YORK CITY—The important part that electric leagues can play in helping to overcome some of the present-day electrical appliance merchandising problems was stressed by speakers representing various branches of the industry in talks at last week's fourth annual conference of the International Association of Electrical Leagues here.

Current problems in electric refrigerator merchandising were discussed with league managers by C. R. D'Olive, manager of the household appliance department of Stewart-Warner Corp., who asked cooperation in insuring that the industry may meet and solve its problems along sound and healthy lines. Mr. D'Olive's talk will be published by the NEWS in a future issue.

Profit possibilities in electric range and water heater merchandising were outlined by J. R. Poteat, manager of General Electric's range and water heater section, who pointed out that the net dollar return to the utility is increased 27% by the electric cookery load—and the addition of

(Concluded on Page 2, Column 1)

Brennan Central Zone Manager For Gale

GALESBURG, Ill.—J. E. Brennan has been appointed central zone manager of Gale Products, in charge of the company's field sales force now operating in Michigan, Ohio, western New York, and sections of West Virginia and Kentucky.

During the past four years, Mr. Brennan has been associated with Universal Cooler Corp., Detroit, in charge of that company's sales force in the central west territory. His new appointment will permit him to remain in his former territory, and continue his former trade contacts.

The new Gale zone manager has a background of 15 years' experience

(Concluded on Page 3, Column 5)

War May Not Hurt Cork Supply; Effect On Enameling Seen

LANCASTER, Pa.—War developments in Europe have caused the U. S. War Department to specify cork as a "critical material," H. W. Prentis, Jr., president of Armstrong Cork Co., told distributors and salesmen who attended the recent sales conference of the low temperature insulation department at the company's headquarters here.

Despite the European War, however, the company is confident it can carry on its domestic business satisfactorily even on an expanded basis, Mr. Prentis said. He declared that the company has on hand adequate stocks of cork and expects to encounter no difficulty in the immediate future in obtaining fresh supplies.

"Germany and Central Europe are today prevented from securing supplies of cork," Mr. Prentis stated, "and since cork is specified as 'critical material' by the U. S. War Department, we are convinced only that adequate supplies will be available in Spain, Portugal, and North Africa, but that sufficient cargo capacity will be at our disposal—once the submarine menace is gotten under reasonable control."

Increasing activity in all low temperature lines was reported by distributors and dealers attending the conference, who stated that business in their field was keeping pace with the general upswing, and that they have benefited from the steady march of the refrigerated locker storage movement.

They also reported increasing

(Concluded on Page 2, Column 4)

War Shuts Off Supply Of Vallendar Clay

CHICAGO—The European War has shut off the source of supply of Vallendar clay, a German product used extensively in the enameling industry, reports Porcelain Enamel Institute in the September issue of its Market Research publication.

This is the first time since 1919 that the supply of this imported clay has been curtailed, the publication says. Stocks of this product in the U. S. are reported to be very spotty, with some concerns reported to have comparatively large supplies.

One refrigerator manufacturer, it is said, has a year's supply in stock. Other companies are reported to have practically none, and import companies are reported to have very limited stocks.

As a result of this curtailment of supply, the publication says, many American enameling firms face the problem of finding a good domestic clay and learning how to use it. Some ceramic suppliers are reported to have developed American clays which are equal in quality to the imported product.

'Frozen Sleep' Treatment For Cancer Requires Air-Conditioned Treatment & Patient Rooms

NEW YORK CITY—The "frozen sleep" method of treating cancer patients will be the subject of an intensive two-year study by physicians at Lenox Hill Hospital, using a special "hibernation" room, insulated from the rest of the hospital, and air conditioned to a temperature of from 58 to 65° F.

Funds for the study have been provided by an anonymous woman donor, the Amidon fund of the hospital, and Metropolitan Life Insurance Co., John H. Hayes, superintendent of the hospital, said in announcing the project. This will be the first comprehensive clinical examination in New York City of the treatment, devised by Dr. Temple Fay and Dr. Lawrence W. Smith, of

U.S. Grand Jury To Probe N. Y. Electrical Trade

Restraining Practices of Suppliers, Contractors, Unions Under Fire

NEW YORK CITY—An investigation of alleged illegal practices of companies which supply and install electrical equipment in building projects in the metropolitan area will be conducted here by United States Attorney John T. Cahill before a Federal grand jury which convenes Nov. 9. Alleged restraining practices in other phases of the industry may also be probed, it was announced.

More than 100 subpoenas have been served on electrical contractors, manufacturers, associations, and labor unions "requiring full disclosure of documentary evidence."

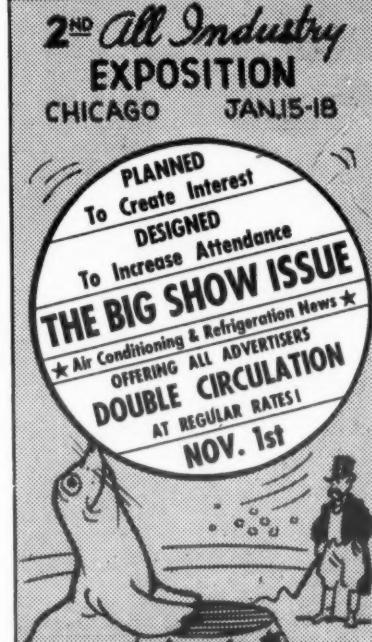
Mr. Cahill's action was in line with a nation-wide drive against the anti-trust violations involving interstate commerce in the building industry.

N. Carolina Licensing Contracting Firms

RALEIGH, N. C.—Licenses were granted to 14 air-conditioning contractors by the Carolina state board of examiners of plumbing and heating contractors, following the first examination given here Aug. 29 and 30. Air-conditioning contractors were placed under the jurisdiction of the board by a legislative act passed early this year.

The examinations were passed by W. H. Sullivan, Jr., Greensboro;

(Concluded on Page 16, Column 3)



'Frozen Sleep' Treatment For Cancer Requires Air-Conditioned Treatment & Patient Rooms

Temple University, Philadelphia.

The treatment induces in the cancer patient a condition akin to the hibernation of animals. Results observed in Philadelphia and other experiments indicate that some patients have been given considerable relief from pain, but physicians agree that at least another five years of investigation must be made before the real value of the treatment can be estimated.

In the general method of cooling, the patient is first put to sleep with sedatives while still in his ward. He is then moved to the special air-conditioned "hibernation" room for the rest of the treatment.

For a brief time, his body tem-

(Concluded on Page 16, Column 4)

'Quicold' Powders To 'Supplement' Ice Cubes, Advertisement Says

NEW YORK CITY—Canned Cold Chemical Corp., which will market the "Quicold" powders to cool beverages, is apparently planning to advertise the product as a supplement to, rather than a substitute for, mechanical refrigeration.

In one of its first advertisements the copy states: "No worry now about ice cubes running low with Quicold on hand." The advertisement further states that the powder "will chill liquids, fruit juices, and canned fruits in 5 minutes," and that it is "20° colder than ice."

Quicold consists of two powders, which create a chemical reaction which is claimed to reduce the temperature of adjacent liquids within three minutes 20° more than ice. The company is supplying a specially built cocktail shaker, with a center chamber for holding the liquor or fruit juice, around which the Quicold is poured.

Quicold got wide publicity through the story and pictures of it published in the March 27 issue of "Life" magazine, which story was commented upon by several leading engineers and chemical authorities in a printed discussion appearing in the March 29 issue of AIR CONDITIONING & REFRIGERATION NEWS.

Storage Doubles Profit On Peaches; Need For Field Storages Cited

GRAND RAPIDS, Mich.—Storage of Elberta peaches since mid-September has resulted in profits up to 100%, western Michigan growers report. By placing 40 and 50-cent peaches in cold storage at the harvest peak, growers are now realizing from \$1 to \$2 per bushel for the fruit.

Edward Dunneback, Kent county orchardist, states that he has made more money this year out of storing peaches, than out of growing them. Over a period of time growers have found that it pays to place peaches in cold storage during the harvest season.

Profits on stored peaches were higher in 1937 than this year, as the

(Concluded on Page 16, Column 3)

Dairy Show 'Streamlines' Registration Method

SAN FRANCISCO—A simplification yet tightening of the admission procedure for this year's Dairy Industries Exposition, to be held Oct. 23-28 in San Francisco's Exposition Auditorium, is now in process under the supervision of a recently created Exposition Credentials Committee.

Some of the new plans are thought to be innovations in industrial show procedure and are designed to "streamline" admission procedure.

The Dairy Industries Supply Association, sponsoring organization, is now issuing more than 10,000 returnable forms designed to facilitate the admission of owners, executives, and employees. These forms state that:

"This year the exposition management plans to conserve the valuable time of its guests (and your patience, too) by inaugurating two principal changes in registration procedure:

"First: Members of the International Association of Ice Cream Manufacturers and the International Association of Milk Dealers will register once only at their convention headquarters. Membership badges issued there will be honored

(Concluded on Page 2, Column 4)

Knoxville Power Board Keeps Tab On Trade-In Bids

Clearing-House Function Sets Allowances and Hits Price-Cutting

KNOXVILLE, Tenn.—Strictly controlled trade-in allowances on refrigerators and ranges have stymied cut-throat price wars among appliance dealers here, and profits and customer satisfaction have been boosted as a result of the plan, says C. O. Carpenter, Jr., general sales manager of Knoxville Electric Power & Water Board, the city-owned utility which is cooperating in the trade-in control.

The plan has been in force for some months, and dealers are reported to be very well pleased with the results. The utility acts as the clearing house for information on trade-ins, keeping records of allowances so that cooperating dealers will have a base for appraisals.

The mechanics of the plan are simple. The dealer making a call on a refrigerator or range prospect having ice or mechanical refrigeration or a range to trade will call the office of the utility asking if any other dealer has bid on the trade-in, establishing a set price for this particular prospect's appliance. The utility has the names and addresses

(Concluded on Page 3, Column 3)

Art Scaife Moves To Bridgeport Post

BRIDGEPORT, Conn.—A. L. Scaife, for several years director of advertising and sales promotion for the specialty appliance sales department of General Electric Co., has been appointed assistant advertising and sales promotion manager of the General Electric appliance and merchandise department.

Mr. Scaife, who formerly had his headquarters at Cleveland, will move to Bridgeport, now the headquarters of all G-E appliance activities.

In his new post Mr. Scaife will be specifically in charge of advertising and promotional planning for the entire appliance line, according to the announcement.

Macy Now Offering Time Payment Plan

NEW YORK CITY—Starting Tuesday, Oct. 9, R. H. Macy & Co., Inc., New York department store, will sell goods on the instalment plan through the offering of a "cash-time" service, according to an announcement made by J. I. Straus, acting president of the company.

The instalment selling plan will not apply to all items in the store, but will be applied to major appliances and all types of durable goods, including furniture.

A service charge of 6 cents will

(Concluded on Page 3, Column 4)

G-E Has 'High-Speed' Germ-Killing Lamp

SCHENECTADY, N. Y.—A new germ-killing ultra violet lamp which may have future use in hospitals and air-conditioning systems has been developed by research engineers of the General Electric Co.

The new lamp was demonstrated for the first time last week at a meeting of the Schenectady County Medical Society, and engineers said the lamp would kill all bacteria in 113 cu. ft. of air per minute. Seven

(Concluded on Page 16, Column 2)

Range Training Needed, League Men Hear; Importance of Small Appliances Stressed

(Concluded from Page 1, Column 1) the electric water heater increases this return again by 75%.

Problem of making range and water heater selling more profitable to the retailer is one in which electric leagues can play a part vital to continued dealer interest—the training of salesmen to do a more efficient selling job and thereby lower distribution costs, Mr. Poteat asserted.

"Of the many problems which face the retailer in the merchandising of electric ranges and water heaters, not the least is the untrained salesman," Mr. Poteat said.

"Dealers need advice and guidance on supervising their salesmen and operating their stores. Development of a price-cutting situation usually is the result of weak salesmanship. When a dealer uses only price in his approach to the public, he is usually confessing his inability to sell his product."

That the small appliance sales market is anything but small was emphasized by H. B. Donley, manager of appliance sales for Westinghouse, who declared that retail volume on these products during the last 12 months totaled some \$70,000,000.

Traffic appliances have attained maturity in the industry without more than a fraction of the promotional effort put behind refrigerators, ranges, and other major appliances, he declared. Prospects for these appliances run into the thousands, as against hundreds for the larger products, he said.

To get more of what he characterized as "these \$5 transactions," Mr. Donley advocated two practices: 1. the spotting of these appliances at traffic points within the store, and 2. the continuous selling of their uses and benefits.

Electric leagues, he said, can help in the timing and coordination of promotional efforts to sell traffic appliances—the "staples" of electrical merchandise—the year around.

A call for cooperation within the electrical industry to solve some of the problems that face it was sounded by C. W. Kellogg, president of Edison Electric Institute, in an address at the meeting. Special need at present is for a concerted drive to lower wiring costs to make possible a greater use of "heavier" appliances in the average home, he declared.

Recent advances in wiring materials and the art of wiring have made possible a lowering of these costs, Mr. Kellogg said, but there has been much delay in obtaining approval of these new developments and recognition of their desirability. With utility companies on record as favoring the changes, Mr. Kellogg expressed himself as hopeful that contractor-dealer members of the industry would vote approval this winter.

Any examination of the electrical industry of this country dispels notions that a "power trust" or any other single group controls a business that is split up into so many subdivisions—in fact, what is needed now in the industry is more cooperation to

solve some of the problems that face it, declared Mr. Kellogg.

"The progress that has been made under the spur of competition is one of the inspiring stories of American Enterprise," said Mr. Kellogg. "In the matter of electric illumination, the cost of a given unit light (due to lower energy cost, more efficient and cheaper lamps) is now but one twenty-fifth of what it was 35 years ago.

"Many useful electrical appliances, like the refrigerator and range, were so expensive when first produced, due to rates and price of equipment, that they could be utilized only by the very rich, and then more or less as a stunt. Here the competition was not only between different manufacturers, but with old man Economics himself, but the manufacturers performed notably.

"In 1924 an electric refrigerator cost around \$450 and the current to run it averaged 7.20 cents a kilowatt-hour. Today that refrigerator, vastly improved as to convenience, durability and appearance, sells at an average price of \$170 and takes 50% less current than those early models, and the current it does use averages to cost 4.15 cents per kilowatt-hour instead of 7.20 cents as in 1924.

"For our manufacturing friends it should be pointed out that the electric utilities themselves face very real competition in their sales. The well recognized monopoly feature of the utilities has reference principally to the avoidance of needless duplication of investment, a monopoly definitely in the public interest.

"We find the utilities spending an aggregate of \$75,000,000 a year for developing increased sales of energy. These increased sales were obviously easier to effect, the cheaper the consuming apparatus could be purchased, and the first effect of this realization, 20 years ago, was for the utility companies not only to enter activity into the retail sale of consuming devices, but to sell them at wholesale cost or less.

"It soon appeared that this plan would stagnate the normal growth of retail outlets for such equipment and by their elimination the utilities would be deprived of thousands of active dealers who could be of immense help in making sales. As a result of a more cooperative and more enlightened attitude gradually adopted by the utilities, we find that in 1938, and for five to six years past, only 15% of the current consuming equipment was sold by utilities and the remaining 85% by retail dealers.

"For many years however there is one important link in this long chain which has yielded more slowly to similar improvement or development—electric wiring.

"The electric utilities have made a number of proposals for changes in the Code to permit the adoption of carefully considered and well tested wiring developments which, we are convinced from our experience, will attract our customers to buy and thus stimulate the business and profits of all branches of the electric industry."

Hotpoint Executive



F. B. WILLIAMS
Named sales manager of Hotpoint's refrigeration division.

Nebraska Power Opens Greatest Sales Drive

OMAHA, Neb.—The most intensive sales campaign ever sponsored by the Nebraska Power Co. was launched on Oct. 1, with its goal the sale of \$1,250,000 of electrical appliances.

Plans for the sales campaign, labeled "mutual opportunity," were explained to dealers at a "dutch lunch" held recently. The slogan for the drive is "Live Even Better... Electric Service is Even Cheaper." The slogan is founded on the new lower rates effective Oct. 1, which the company has made available to Omaha and Council Bluffs. Other rate reductions for rural towns had been made previously.

The sales plan hinges on telling every customer of the utility how much more electricity he can use at no extra cost. To do this, the company has employed 75 additional salesmen who have been given two weeks intensive training. They will carry the story of cheaper electricity to every one of the company's 78,000 customers during the activity.

These sales ambassadors will be armed with folders showing the exact amount of extra kilowatts each customer can use at no extra cost. They will also be on the watch for electrical appliance prospects, turning these prospects over to the dealers for sales follow-up. Dealers will be given a time limit of five days to get action on each prospect given them. If the first dealer rings up a "no sale" on the prospect, another dealer is given the chance.

If the second dealer fails, the prospect will be visited by veteran Nebraska Power salesmen for still further sales effort.

Full-power advertising will back up the sales campaign. Radio, billboards, screen, direct mail, daily and weekly newspapers, plus tie-in advertising by dealers, will carry the story of electrical appliances to the public. First big publicity blast was a 12-page electrical section in a Sunday edition of the Omaha World-Herald. Advertising of the utility featured booster copy for the drive, and dealers tied in with their own advertising.

The goal of the utility's drive is to up sales for dealers, and to get back the \$450,000 annual revenue that was lost when the reductions went into effect in Omaha and Council Bluffs.

Effects of War Plus Increased Demand on Cork Is Discussed

(Concluded from Page 1, Column 2) interest in the "Polar Chest" locker system, and S. C. Martin, manager of the low temperature insulation department, reported that there are now 5,700 "Polar Chest" lockers in use, and that the locker storage idea is rapidly gaining popularity in the eastern section of the country.

New developments now nearing completion in the low temperature field will call for much lower temperatures than have ever been maintained previously, the conference was told. Such developments, when ready for actual use, are expected to spur sales of insulating materials, since heavier insulation will be required for the extra-low temperatures specified.

Although he indicated that a considerable increase in general industrial activity is likely, Mr. Prentiss advised against abnormal purchases by Armstrong customers at this time, explaining that every effort will be made to keep prices stable. However, should raw materials and other costs greatly advance, selling prices of necessity must be raised, he warned.

Distributors represented at the conference included: E. E. Saberhagen, Asbestos Supply Co., Seattle; C. W. Dabney, Capital City Supply Co., Charleston, W. Va.; J. L. Whitteman, Clark Asbestos Co., Cleveland; Ira S. Horel, Horel-George Co., Eau Claire, Wis.; Arthur Remington, Johnson Asbestos Co., Springfield, Mass.; L. D. Myers, Joplin Cement Co., Joplin, Mo.; D. E. Kelley, L. A. King, and J. B. Anchors, Kelley Asbestos Products Co., Kansas City, Mo.; William Bartelt, Northwestern Asbestos and Cork Insulation Co., Appleton, Wis.; T. R. Nunan, T. R. Nunan Co., Boston; W. B. Swanson, Sr., and Louis H. Rogers, Rhode Island Covering Co., Providence, R. I.; M. T. Klever, Southwestern Insulation Co., Springfield, Mo.; G. W. Ruth, Stearns-Roger Mfg. Co., Denver; and A. B. Callow, Van Fleet Freezer Co., Los Angeles.

Register Before Going Plan For Dairy Show

(Concluded from Page 1, Column 4) by, and carry full admission privileges to the Exposition.

Second: All other prospective visitors are invited to fill in their registration cards in advance of the show.

"For your convenience, a detachable card appears below. Just fill it in today, tear it off, clip to it your business card or letterhead, bring these credentials with you to San Francisco, present them at the guest registration section in exposition auditorium and presto, your admission badge will be handed to you. No long waiting. No long questioning. Just action! Use a minute today and save an hour tomorrow."

Upon registration identification, non-manufacturing jobbers of dairy machinery and supplies are eligible for admission. An individual registration fee of \$100 has been set for admission to the show of non-member, non-exhibiting manufacturers of dairy machinery, supplies, and materials. Member non-exhibitors pay a lesser fee than this.

Takes Post With Gale



J. E. BRENNAN
New central zone manager for Gale Products.

132,297 Washers Sold In U. S. In August

CHICAGO—August shipments of electric washers totaled 132,297 to gain 2.4% over shipments for the same month of 1938, reports to American Washer & Ironer Manufacturers Association reveal. Last August shipments were 129,163 units.

Shipments for the first eight months of this year were 971,174 units, against 745,080 in 1938, an advance of more than 30%.

Ironer shipments dipped slightly in August, totaling 11,386 as compared to 11,977 in the same month last year. Through August, 1939 ironer shipments were 71,654 units, against 71,309 in 1938.

Borg-Warner To Handle Aminco Exports

DETROIT—Appointment of Borg-Warner International Co. as export representative for Aminco products has been announced by Edward P. Kellie, sales manager of American Injector Co.

Under the arrangement, foreign sales of Aminco products in all countries except Canada will be handled by Borg-Warner International's refrigeration division, of which S. F. Malcolm is sales manager. Canadian business will continue to be handled through American Injector's home office here.

6,525 Refrigerators Sold In Dallas In 8 Months

DALLAS, Tex.—Electric refrigerator sales by dealers here amounted to 678 units during August, bringing the year's eight-months total up to 6,525, according to reports to Dallas Power & Light Co.

Estimated dollar value of refrigerator sales was \$115,260 for August, and for the eight-months period \$1,109,250. Attic ventilating systems, with 81 sales during the month, had an estimated dollar volume of \$20,250 for the month and \$183,750 for the year so far. Total volume of all appliance sales during the month was \$345,371, pushing the eight-months figure to \$2,796,121.

Marked Men

• Every Ansul cylinder is a "marked man." For every Ansul cylinder is *individually analyzed*—a written guarantee to you that Ansul refrigerants are just what we say they are—*pure, clean, dry*.

**ANSUL SULPHUR DIOXIDE
METHYL CHLORIDE**

ANSUL CHEMICAL COMPANY • MARINETTE, WIS.

THE JOBBER WHO WORKS FOR ANSUL WORKS FOR YOU

K TO ALL WHOM IT MAY CONCERN

In order to associate our Company name with the Principals who have founded the business and designed and manufactured the vast variety of Kramer Products, we have changed our corporate title from Trenton Auto Radiator Works to

KRAMER TRENTON COMPANY

TRENTON, NEW JERSEY

RAME

Major Appliances

'Cash In on Electric Range and Water Heater Profits,' Urges Jack Poteat

NEW YORK CITY—There's profit in the electric range and electric water heater for everyone from the salesman who sells these appliances to the utility which supplies them with current—providing that these products are actively and aggressively merchandised.

This was the keynote of the speech delivered Oct. 4 before the fourth annual convention of the International Association of Electrical Leagues in the auditorium of the Electric & Gas Association here by Jack R. Poteat, manager of General Electric Co.'s range and water heater sales.

While stating that both the electric range and water heater fit perfectly into the "profit economy" of today, Mr. Poteat warned his listeners that neither of these items have as yet been promoted to the point where people will come in and buy them. Both still have to be sold, he insisted, and in the cooperative effort which the electrical industry must place behind this selling lies the real secret of their profit-making possibilities.

Analyzing the profit incentive underlying range and water heater sales, Mr. Poteat stressed the fact that under the proper conditions the sale of these products yields worthwhile rewards to the salesman, the dealer, the distributor, the manufacturer, and the utility.

UTILITIES PROFIT

Proof of profit from the utility standpoint, he said, is evidenced by the fact that in sections where the range and water heater have been extensively promoted the average rate of domestic current consumption far exceeds the national average.

"If the national domestic consumption averaged as high as it does in those areas in which ranges and water heaters have been aggressively sold," Mr. Poteat pointed out, "this consumption would be 35 billion kwh. a year rather than 20 billion, an increase of 75%. And the income from the domestic group would be \$1,055,000,000 annually instead of \$835,000,000, an increase of 25%. Manufacture and sale of ranges and water heaters to fill this demand would mean another \$500,000,000 business. This sounds like profit to me."

"In order to determine the relative profitability of the various loads which a hypothetical utility is called upon to serve, an independent engineering concern in New York arrived at the following interesting conclusions. For the sake of the study, it was assumed that energy cost five mills at the bus bar and the rate was the ultimate of an objective rate.

"Under these conditions, the lighting bill was \$1.90, refrigeration \$1.15, cooking \$2.10, water heating \$3.06—total \$8.21.

"With these rate and cost conditions this study shows that with the addition of the refrigeration load to the lighting and small appliance load, net dollar earnings per year increase 5½ times. When the electric cooking load is added to this, the net dollar return to the utility increases another 27%. Then with the addition of the water heater, the net return is increased again by 75%.

"The important point of this is not the specific figure quoted, but their relationship.

RANGE AND HEATER AT TOP

"When considered from the standpoint of kilowatt hours per dollar of consumer investment, the range and water heater are at the top with 8 and 30 kilowatt hours per dollar in consumer investment respectively.

"If the electric range and the electric water heater are to return a profit to the salesman, retailer, distributor, and manufacturer, there must be a sufficient difference between the list sale price and the manufacturing cost to compensate each member of the chain of distribution for services rendered.

"The research committee of the Twentieth Century Fund recently

issued a report on the subject 'Does Distribution Cost Too Much.' This report makes the point that today in the United States it costs considerably more to distribute goods than to make them.

"Out of every dollar spent by the consumer, about 59 cents goes for the services involved in distribution. Although in 1930, about 75% of gainfully employed workers were engaged in production activities, today the figure is probably a little less than 50%. Thus this committee answers its own question in the affirmative."

Citing the technical development of the range and water heater, Mr. Poteat stressed the importance of improved products and lowered prices. "Within the past five years," he said, "both have become thoroughly reliable lifetime investments.

LEAGUES CAN HELP

"The problem of making the range and the water heater profitable to the retailer," Mr. Poteat declared, "is one which electrical leagues can aid in solving. If retailers do not make a profit their interest will not continue.

"There are many problems which face the retailer in the merchandising of electric ranges and electric water heaters. Not the least of these is the untrained salesman. The untrained salesman is a contributory factor to the high cost of distribution.

"The manufacturers have perhaps been partly responsible for this condition, even though a great deal of money and time is spent in providing material for the training of salesmen. Material is provided which is adequate but sometimes too complicated for the average salesman. Simplification of presentation will make the salesman's job easier.

"Dealers need advice and guidance on supervising their salesmen and operating their stores. The development of a price cutting situation on any product is usually the result of weak salesmanship. When a dealer uses only price in his approach to the public, he is usually confessing his inability to sell his product. That inadequate selling is done on electric ranges is amply evidenced in an examination of service calls, the majority of which are due to ignorance on the part of the customer as to how to use the product.

IMPORTANCE OF FOLLOW-UP

"The follow-through after the sale, with the home economist going to the customer's home, is as important a part of the total sale as the signing of the order. Almost 75% of the purchasers of electric ranges confess that they make their purchases because of the recommendations of friends. How important it is, therefore, that all users be given a satisfactory start in the use of their electric ranges, thus providing a large backlog of possible prospects due to enthusiastic recommendation on the part of the new user.

"All of these factors, better salesmanship, better dealer operation, better follow-through will reduce the cost of each sale and multiply the number of prospects. The net result to the dealer and his wholesaler will be a profitable sales operation. These parts of the sales job are electrical league opportunities."

In concluding, Mr. Poteat outlined the following four-point program through which electrical leagues in all parts of the country might help in the promotion of electric range and water heater sales:

1. Training of salesmen in cooperation with distributors and dealers.
2. Promotion of cooperative programs with all retailers (whether the utility merchandises or not) wherever such programs are sound from a merchandising standpoint.
3. Tie-ins with national promotions such as the Modern Kitchen Bureau.
4. Improvement of home wiring conditions.

Knoxville Trade-In Plan Halts 'Allowance Wars'

(Concluded from Page 1, Column 5) of all prospects on file, and can tell at once whether or not an appraisal has been made.

If a previous allowance has been made, the inquiring dealer is told the date, the amount offered, and the dealer making the first appraisal. If the second dealer believes that the appliance is worth more than the first appraisal, he gets in touch with the dealer who made the original offer in order to adjust the difference.

When the utility has no record of an appraisal being made, the prospect is listed with the name of the dealer, the date, and his allowance figure. The same is true on refrigerators or ranges.

Mr. Carpenter cited several factors as proof that the plan is a success and being strongly endorsed by dealers.

"The dealers do not have to compete for business on a price-cutting basis of allowing enormous trade-in prices," Mr. Carpenter stated. "The smaller dealers, who do not or cannot afford to have expert appraisers, can compete with the larger dealers and can rely upon them in a number of cases to make good and fair appraisal.

"The customers are better satisfied," he continued, "and their belief in dealers is maintained higher when all the trade-in allowances are the same. In other words, it raises the customer's opinion of the dealer or the dealers as firms and as competent business men. The customer will

buy appliances on sales appeal and on sales preference rather than on commodities on low cost (high trade-ins).

"The plan brings the dealers more closely together and they can interchange ideas on sales, salesmen, campaigns, and in every phase they will do good for the electrical industry," Mr. Carpenter finished, in summing up the results of the trade-in plan.

'Cash-Time' Payment Plan Established By Macy's

(Concluded from Page 1, Column 5) be made on each 84-cent purchase. An item priced at 94 cents for cash thus will sell for \$1.00 on the "cash-time" plan. The minimum purchase permitted will be \$23.

The plan also includes "purchase book certificates" which will represent cash throughout the store. The purchase certificates in books of \$25 will carry a service charge of \$1.60. The payments on the coupon books will be \$5 a month for five months.

Initial payments and payment periods will vary according to the type of merchandise purchased. The payment periods will range from four to 16 months. The down payments will vary from 10 to 20% of the cost of the listed items.

Macy's has been known since 1858 for its policy of selling for cash only. The inauguration of a time selling plan follows extensive research by Macy staff members into credit selling for the past several years.

The "D. A." or depositor account system of the store, which has more

than 200,000 customers enrolled, will be continued unchanged, it is announced.

"For years we have realized that so-called 'time selling' was growing in popularity and spreading to all income groups," Mr. Straus said in making the announcement. "For years we have worked to perfect a plan which rises directly out of our basic cash policy and which broadens its scope."

"We recognize that a customer may have good reasons for paying out of income instead of capital, and just as emphatically we believe that a person who has the cash should be able to buy at cash prices which are not weighted by added cost of a credit operation."

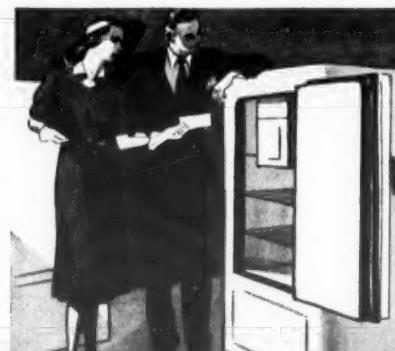
Brennan To Set Up Cleveland Office For Gale Products

(Concluded from Page 1, Column 1) in refrigeration merchandising with retailers, distributors, and manufacturers. He was a retail salesman for five years, associated with Public Service Co. of Northern Illinois and Sears, Roebuck & Co.

He spent some years in the wholesale field with Rowlands-Halleck Co., former Kelvinator distributor in northwestern Ohio, and later with J. W. Greene Co. of Toledo, Westinghouse distributor.

To better his service to dealers, Mr. Brennan will establish an office in Cleveland, at which point a complete display of the Gale Products line will be maintained for customers' convenience. His present address is the Tudor Arms hotel, Cleveland.

"How I Sold a Refrigerator to a Wedding Belle"



"Last June a bride-to-be came into my store to look at refrigerators. You know how young women are today—they read volumes of 'How to Select' articles before they buy. And she certainly had read up on refrigerators."



"I'm sure glad that my refrigerators are equipped with G-E motors. I always mention them to prospects, and you'd be surprised how many people immediately accept the electric equipment as being of high quality."

G-E Motors Help You Sell Other Appliances

You know the value of satisfied customers. This young bride, like her mother, can be a great booster for your appliances. In addition, she will be wanting other appliances—a washer, a vacuum cleaner, perhaps an ironer—and she'll undoubtedly come to you first if she likes her new refrigerator.

You can be sure that G-E motors will please your customers in every respect. They are quiet and economical. They'll give many years of reliable low-cost service. Wearing parts are few and are designed for years of operation. G-E motors also make friends because they require no attention except infrequent oiling. General Electric Company, Schenectady, N. Y.

GENERAL ELECTRIC

Air Conditioning

Dr. Young Makes Plea For Experiments In Air Conditioning of Schoolrooms

He Also Describes Research Which Demonstrates How High Relative Humidities Produce Adverse Effects

NEW YORK CITY—Dr. Albert G. Young, Ph. D., M. D., medical director of Corey Hill hospital in Brookline, Mass., gave the fourth annual conference of the International Association of Electrical Leagues a pleasant surprise Thursday morning.

Scheduled to speak on "The Pathological Aspects of Air Conditioning" (a topic guaranteed to depopulate the auditorium in nine minutes flat), Dr. Young crossed up everybody by presenting a live discussion of a highly controversial topic on which little has ever been told in public: "The Air Conditioning of School Rooms."

CAUSE OF 'CLOSENESS'

Dr. Young, who was written several articles on the health aspects of air conditioning for AIR CONDITIONING & REFRIGERATION NEWS, contends that "poor air" or "closeness" in a room is not dependent upon the relative proportion of oxygen to carbon dioxide, as has always been commonly thought. Rather, it is dependent upon the temperature, humidity, and air conditioning.

In other words, school rooms definitely need air conditioning.

The mental and physical response of normal individuals to changes in temperature and humidity may explain why the children near the windows and the outside wall want

to indulge in a riot, while those in the overheated sections just take a nap.

(And a composite curve of those reactions might help explain why teachers grow prematurely gray!)

Despite the fact that most states have laws relating to school room ventilation, almost every school room is ventilated more by opening the windows than by use of fans.

FACTORS OF AIR

The temperature, humidity, and air motion in the majority of American school rooms depend upon:

(1) Outside atmospheric conditions.

(2) Number of students in the room.

(3) Whether or not the janitor has put on his winter underwear.

Dr. Young believes that air conditioning can take care of these three variables by providing a constant supply of clean, moving air at the proper temperature and relative humidity without creating drafts.

He cites figures on results found by the Detroit Edison Co., Proctor and Gamble Co., and the Philadelphia Electric Co. as to the increase in efficiency of employees working in air-conditioned office space in substantiation of his contention that illness and tractability of school children can be improved with air conditioning.

A Scientific Brand of Sales Ammunition

There's a lot of scientific argument for air conditioning in Dr. Young's article—argument that is based on scientific knowledge and research, rather than generalities about the "great benefits of air conditioning."

It is this type of information that will sell air conditioning to many people, and salesmen and dealers can make this page a valuable addition to their sales presentations.

Inasmuch as air conditioning reduces noise by some 90%, Dr. Young believes that it is exceptionally desirable in school rooms.

AIR CONTROL'S BENEFITS

Tests on both children and adults, he notes, show that diminution of noise:

(1) Increases working speed and accuracy.

(2) Decreases absenteeism.

Intermittent mechanical noises, he finds, are the most disturbing.

But isn't air conditioning too expensive? Dr. Young doubts it—particularly when installed in new school buildings. The Detroit Edison Co. found that air conditioning installed in a new building did not add to its cost, since it allowed the construction of the building in a solid block, instead of the conventional design of an E or H shape to permit outdoor light and ventilation. Its six air-conditioned floors contain more usable space than a conventional eight-story building without air conditioning.

Detroit Edison has also found that total operating and maintenance costs for its air-conditioned building (based on net area) are 39.7% lower than in its non-air-conditioned office building. Labor costs, incidentally, are 40.2% lower (air conditioning keeps it clean).

Schools, Dr. Young notes, are closed during the season when heavy cooling effect would be needed; nor do they require equipment which generates unnecessary heat.

PROPOSES EXPERIMENT

"I should like to perform the following experiment," states Dr. Young. "Air condition the fourth grade of one or two of our public schools. We would have a three-year record of scholastic performance and absence records of these children.

"We could then give them a year in an air-conditioned school room and compare the results with their past record and also that of the other children in the school.

"If the results prove to be as favorable as I expect we could then add to the installation and get some definite cost figures on maintenance.

"About \$5,000 to \$7,000 would be adequate to carry out such an experiment. Would it not be worth while to venture this amount when there is so much to be gained?

"A child's future depends more upon good health than on any other single factor. The school age is the most critical health period, and under our present system it is the time when the child is most exposed to infection, poor ventilation and poor illumination.

"If we are to continue living in cities, and want to continue our progress, we must take the necessary step to protect our children from the artificial pollution of the air."

THE 'HUMAN ENGINE'

Continuing with a more technical treatment of the effect of air conditioning on people in assembly rooms, Dr. Young declared:

"Only recently have we arrived at the simple conclusion that the normal body physiology must be considered if we are to successfully attack the problem of heating and ventilation for the human body.

"The human body must be looked upon as an internal combustion engine which is constantly generating heat. The body loses heat by radiation, conduction, and convection. Like a mechanical engine it has an optimum temperature for maximum efficiency and there are numerous controls to maintain this temperature.

"The body is much more complex than the mechanical engine, however, in that it must also carry out the processes of growth and repair and provide for our mental functions. A relaxed man in bed generates a minimum of 320 B.t.u. per hour. Under mental strain, activity or a combination of the two the heat production may be increased from 20 to 40 times the resting rate.

HOW BODY HEAT IS LOST

"About 80% of the heat given off by the body goes out through the skin. This is made possible by the ability of the body to increase the circulation of the blood through the skin capillaries. The blood diverted through these channels under undue heat may increase 50 times that of the normal circulation.

"Since the volume of the blood in the body remains constant, it is obvious that increasing the size of the vascular bed of the skin will lower the blood pressure and also divert blood from other organs of the body. This fall in blood pressure may be sufficient in extreme cases to cause collapse.

"In milder exposure to heat there is a diversion of blood from the brain and gastro-intestinal tract sufficient to definitely lower the physiological function of these organs. If the body cannot give off the excess heat generated, the body temperature rises.

DIFFERENCE IN CONDITIONS

"It is evident that aside from body clothing the ability of the body to dissipate the excess heat will depend upon the temperature, humidity, and motion of the surrounding air. Under extreme conditions the individual can maintain a normal temperature while undergoing extreme physical exertion. Under poor conditions the body temperature will rise with the individual at rest.

"Thus we see that it is possible for a man lying in a bed to be put at a greater physical test than one who is exercising vigorously. Assuming that both individuals are

normal, the deciding factor will be the surrounding media, which is the air.

"Permit me to illustrate this point with an experiment performed on a normal individual. This man lightly clothed was placed in a room at a temperature of 86° F., relative humidity 48% and ventilated by an electric fan. On entering the room examination showed blood pressure 116/74 m.m. mercury; pulse 72; respiration 13; body temperature 98.4° F.

"The temperature of the room was gradually raised to 98° F., the relative humidity and ventilation remaining constant. At the end of 1/4 hours his blood pressure was 98/66 (a fall of 18 m.m. Hg. systolic and 8 m.m. Hg. diastolic); pulse remained 72; respiration 14, and temperature 98.7° F.

"When the room temperature was raised to 102° F. and the relative humidity to 58% the blood pressure was 100/66 m.m. Hg.; pulse 82, respiration 15, and body temperature 99.1° F. The man did not feel unduly uncomfortable.

"He perspired freely and felt relaxed. Light exercise made him uncomfortably warm. He could carry out mental calculations with fair accuracy.

WHAT TESTS SHOWED

"The same man was studied the next day in a room where the temperature (98°-100° F.) and ventilation remained the same as in the previous experiment, but the relative humidity of the room was increased to saturation. On entering the room his blood pressure was 116/68 m.m. Hg.; pulse 84; respiration 14, and body temperature 98.6° F.

"At the end of one hour the blood pressure had fallen to 106/66 m.m. Hg.; the pulse was 108; respiration 19 and body temperature 100.4° F. He felt weak, drowsy and uncomfortable. He could not carry out simple mental calculations without an effort to concentrate. He said he preferred not to converse.

"Thus, we see that by increasing the relative humidity of the room, the body temperature, pulse, and respiration increased to abnormal proportions and the patient exhibited the mental as well as physical symptoms of a patient suffering from a febrile condition."

Detroit Edison Issues Booklet To Stores on Air Cooling Benefits

DETROIT—Air conditioning is one of the four principal methods advanced for increasing merchants' sales, in a recent booklet, "How to Make Sales and Influence Customers," issued by Detroit Edison Co. to its commercial customers.

Other sections are devoted to the promotion of better show windows, attractive electric signs, and interior lighting. Space devoted to air conditioning tells briefly "How air conditioning can help your business," sets forth these advantages of air conditioning: increased profits, cleanliness, noise reduction, greater comfort for employees and customers, and increased efficiency.

Testimonials from a number of prominent Detroit concerns begin with one from Wright Kay & Co. jewelers, who state, "In all the years we have been in business, air conditioning is the best single improvement we have made. We would not be without it."

Rutgers Offers Course On Air Conditioning

NEW BRUNSWICK, N. J.—Home study courses in air conditioning, heating and ventilating, gas utilization, and oil burner engineering have been announced by the university extension division of Rutgers University here.

The course in air conditioning is intended for those engaged in the engineering, sales, and servicing division of public utilities, in similar capacities in the designing, manufacturing and installing of equipment, and others desirous of preparing for employment in these fields.

In the past, courses of this type have been used by public utilities which conduct, upon their own properties, class groups of students regularly enrolled in the Rutgers course.

No Spot Clogging • In The

DETROIT AIR FILTER

The large cellular passages of the corrugated board used in Detroit Filters are impregnated to catch all solid particles in the air stream and are rigidly reinforced to prevent sagging. • Because these passages are equal in size, the dust builds up in a uniform layer over their inner surfaces and over the entire area of the filter at the same rate. The size of the passages plus a generous reserve of adhesive permits the dust to accumulate in layers—one upon another. This is the reason for the especially long life of the Detroit Air Filter. • The 90° angle made by the cellular passages provides a scrubbing action which accounts for the very high dust removal efficiency of this unit. Write for descriptive bulletin No. 187.



DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

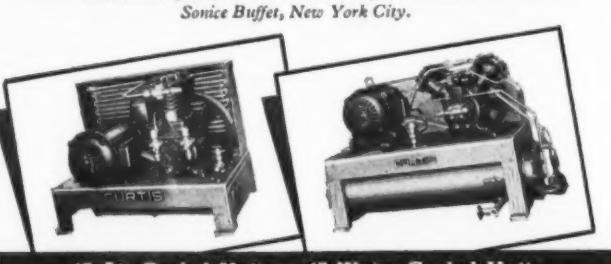
Canadian Representatives: RAILWAY AND ENGINEERING SPECIALTIES LIMITED

Montreal • Toronto • Winnipeg



Installation of Two Curtis Store and Office Coolers in the Sonnen Buffet, New York City.

The Completeness of the CURTIS Line Assures the Correct Equipment for Every Air Conditioning or Refrigeration Need



48 Air Cooled Units—45 Water Cooled Units
— 1/6 to 30 H.P.



Curtis Refrigerating
Machine Company

Division of Curtis Manufacturing Co.

1912 Kienlen Avenue, St. Louis, Mo.

"Builders of Condensing Units Since 1926"

WHETHER you buy, sell, install or specify air conditioning or refrigeration equipment, there's a Curtis unit that fulfills every requirement. Curtis covers a wide range of markets—makes possible greater sales. And you can specify Curtis products with absolute confidence.

The Curtis Store and Office Cooler fulfills the air conditioning demands of all classes of retail establishments. It's a complete, factory designed, packaged air conditioning unit. It mechanically cools, dehumidifies, circulates and filters the air—is quickly and easily installed with only water and electrical connections needed—adaptable for heating, too. It is offered in 3 and 5 ton sizes.

The Curtis Line of Condensing Units includes sizes from 1/6 H.P. to 30 tons air and water cooled—also unit coolers, coils, evaporative condensers, etc. Every Curtis product is precision engineered to deliver economical, efficient, care-free performance throughout an exceptionally long life.

It is evident that aside from body clothing the ability of the body to dissipate the excess heat will depend upon the temperature, humidity, and motion of the surrounding air. Under extreme conditions the individual can maintain a normal temperature while undergoing extreme physical exertion. Under poor conditions the body temperature will rise with the individual at rest.

Thus we see that it is possible for a man lying in a bed to be put at a greater physical test than one who is exercising vigorously. Assuming that both individuals are

Profitable Sales Ideas

Sales Flight: From Sidewalk To Kitchen

Experiment In 'Visual Advertising' Brings Dealer

\$14,000 Refrigerator Sales In First Season

BUFFALO—A definite sales plan, backed up by promotional tactics of a colorful "circus" type, helped Frank Meyers Co. to ring up \$14,000 worth of Philco Conservador refrigerator business in its first year as dealer for that new product in this territory.

When the company was awarded the Philco refrigerator franchise last spring, the Meyers sales and advertising staff immediately went into gear to figure out a new and unusual way of letting Buffalo residents know about it—and at the same time start ringing the cash register with early sales.

The stunt evolved was simple, both in directness and business efficacy. A short radio advertising campaign preceded the arrival of the new refrigerators, and set the stage for their reception.

Store front was cleared, and, when the first two carloads of units arrived, they were not uncrated and placed in the store. Instead, banner signs were placed over the store, announcing the arrival of the new Conservador units in Buffalo.

SOLD FROM THE SIDEWALK

The units themselves were unloaded and placed side-by-side on the sidewalk in front of the store, making a display that could be seen for blocks. The Meyers store being situated in the heart of the downtown business district, the display attracted more than ordinary attention—and, for the first time in the history of Buffalo's electrical dealers, sales started right from the sidewalk, instead of inside the store.

Within the month, the entire first shipment had been cleared. The Meyers company tied up its "visual advertising" program with full-time demonstrations within the store. The entire sales force concentrated on the \$14,000 stock stored on the sidewalk.

Frank Meyers, head of the company, pointed out that the 60% growth of the company in its three years in business has been due directly to the institution of "these slightly different advertising and promotional methods."

"Unique advertising and sales ideas," Mr. Meyers said, "are particularly valuable to a company when placed in operation during the

Getting To Prospect Through His Hobby Provides an 'Inside Track' To Sales

ELMIRA, N. Y.—Appliance salesmen at Elmira Arms Co., Frigidaire dealer here, have organized a "hobby lobby" all their own. By acquainting themselves with the hobbies of appliance prospects they create a community of interests that makes selling easier and more enjoyable for both the salesman and the prospect.

"Find out your prospect's particular interest," says F. R. Hyde, appliance manager of this firm which deals in all kinds of sporting equipment, as well as electrical appliances. "As soon as you strike a sympathetic note in a prospect's interest, you can approach her with greater ease. The barrier of a cold sales approach is removed and sales are easier by far. It works beyond one sale, too. We are certain that we can use every one of these 'friendly customers' to get productive leads."

Finding out the prospect's hobby is not difficult, according to Mr. Hyde. The store prides itself on being a "big family affair." Every customer is treated as a friend, and the hall-fellow-well-met atmosphere of the store leads the customers to talk about their interests. The firm has been in business many years, always striving to put every sale, every customer on a personalized basis. It is the business of the salesmen to study each customer to learn his outside interests, his hobby.

Very often this information may come from a remark, or from an

regular seasonal slumps. Our company now works almost entirely on seasonal plans and timely promotions.

"When business slumps are due, we devise extra means to promote our appliances and products. The results have been more than satisfactory."

Another example of the Meyers kind of merchandising, and its effectiveness when looked at through the profit-and-loss columns, is the company's offer last spring via radio announcements and newspaper advertising, to "ease the spring mover's burdens by taking away their outmoded pianos."

PIANOS FOR REFRIGERATORS

"Our store," Mr. Meyers said, "obviously had no use for the pianos, as we do not sell them. But the idea turned out to be smart merchandising and quite profitable, for we took these pianos in as down payment on refrigerators."

"During the last of April and first part of May, as a result, we sold more than 15% more refrigerators than during any corresponding period in the company's three-year history."

The pianos, incidentally, were not tossed into the rubbish heap. They were carted away to a branch store, which deals exclusively in second-hand merchandise that is taken in by the main store.

A somewhat similar plan of breaking down sales resistance was used recently, when electric washers and ironers were moving very slowly. A \$20 allowance was offered on any used washer or ironer when traded in on a new model.

That offer was good for 60 days. Within that time, nearly 400% more washers and ironers were sold than for the preceding two months. The used material, as before, was turned over to the company's used merchandise store.

Mr. Meyers carries even into his window displays the theory that a dealer must always be kept in the consumer's minds. His window arrangements always contain every major item the store sells, from electric shavers and toasters, to refrigerators and washers. More than 800 feet of Neon signs also help to draw attention to the store, even at night.

These Refrigerators Never Got Into the Showroom



From this unusual "sales floor," the retail staff of Frank Meyers Co. sold \$14,000 worth of Philco Conservador refrigerators without ever uncrating them, except for delivery to new owners' homes. Located in downtown Buffalo, the company chose this "circus" method to get the new line off to a flying start.

It's Papa Who Pays—

OLYPHANT, Pa.—The woman of the house likes to think she's the boss, and when her husband admits the fact, it means an appliance sale for J. J. Lally of Lally's Frigidaire dealership here.

It works this way for Mr. Lally. Very often, he says, a woman will hesitate in putting the final okay, telling Mr. Lally, "You'll have to see my husband first."

Next step in the little drama is to go to the man of the house, state the case, get the go-ahead signal from the keeper of the purse keys.

—But Mama Buys!

This accomplished, Mr. Lally goes back to the woman prospect with the glad news that "it is entirely up to her." The woman then feels her importance grow and from there on in the sale is a snap, he says.



GOOD housekeeping standards in dairies and markets indicate the same need for finish perfection on the commercial job as on the domestic refrigerator.

Fine appearance—rust prevention—a finish that will not chip nor peel—are all as necessary in the modern store as in the well kept kitchen.

With Bonderizing under the enamel, finish performance is assured. Moisture that might penetrate the

PARKER RUST PROOF COMPANY • 2197 E. MILWAUKEE AVE., DETROIT, MICHIGAN

paint film is prevented from reaching the metal and corrosion is defeated.

The Bonderized finish better resists the bumps of mops and brooms as well as the constant handling to which commercial equipment is subjected. The finish is more securely anchored to the metal to neutralize the effects of shock and vibration of hastily closed doors.

The greater value represented by the Bonderized unit helps in making sales.

Send For This Book

It describes Bonderizing in detail and gives the salesman a new talking point that helps close deals.

PARKER
Processes CONQUER RUST
BONDERIZING • PARKERIZING

Locker Storages

Iowa Locker Law Provides For Licensing Of Plants, Protection of Operators; Sets Standards For Stored Food

DES MOINES, Iowa — Definite provisions as to the maintenance and operation of refrigerated locker storage plants in the state of Iowa are contained in a locker plant bill which was passed by the state legislature last winter and became a law on March 20, 1939.

This statute provides for the licensing of every locker plant, and for examination of such plants by the state's department of agriculture. It also sets up certain qualifications for the food to be stored in these plants, and establishes the right of the plant operator to a lien on all property stored in his plant, pending payment of all reasonable charges for services rendered.

Text of the law follows:

Chap. 134.1, Code of 1939

Section 2872.01: For the purpose of this chapter:

"Food" shall include any article used by man for food, drink, confectionery, or condiment, or which enters into the composition of the same whether simple, blended, mixed, or compounded.

"Refrigerated locker plant" shall mean a location in which space in individual lockers is rented to individuals for the storage of food and which is artificially cooled for the purpose of preserving such food.

"Sharp frozen" shall mean the

U. of Ill. Locker Meeting Set For Oct. 26-27

URBANA, Ill.—Interest in food prices and supplies generated by European conditions is expected to create additional interest in the second locker storage conference to be held at the University of Illinois' college of agriculture Oct. 26 and 27, according to Prof. Sleeter Bull, chief in meats.

Topics to be discussed at the conference include salesmanship and advertising, economy in the use of freezer lockers, future of the locker storage industry, preparation of poultry for locker storage, engineering problems, processing of fruits and vegetables for locker storage, and power control and rates.

The first conference held last year drew 150 owners and operators of locker plants, and the number of such plants has increased considerably since that time.

There are now approximately 100 cold storage locker plants in the state of Illinois equipped to handle a quantity of meat equivalent to that from approximately 100,000 hogs, Prof. Bull reports.

freezing of food in a room in which the temperature is zero or below.

"Department" shall mean the department of agriculture.

Section 2872.02: Every person engaged in the business of operating a refrigerated locker plant and who charges a fee for the service rendered shall obtain a license from the department for each establishment at which said business is operated and conducted. Application for such license or licenses shall be made upon forms furnished by the department and shall conform to the prescribed rules of the department.

Section 2872.03: Before issuing a license to operate a refrigerated locker plant, the department shall make an examination of the proposed plant to determine if sanitary conditions and equipment which, in the judgment of the department, are necessary for the proper operation of such refrigerator plant, have been provided.

Section 2872.04: The license fee shall be \$10.00 per annum for 200 or less individual cold storage lockers with an additional \$2.00 per annum for every additional 100 individual food lockers or major fraction thereof.

Section 2872.05: Individuals or corporations licensed exclusively under the provisions of Chapter 134 of the Code, 1935, shall not be required to pay the license fee provided herein.

Section 2872.06: No article of food shall be stored in any refrigerated locker unless it is in a proper condition for storage and meets all the requirements of the pure food and food sanitation laws and such rules as may be established by the department for the sanitary preparation of food products which are to be stored.

Section 2872.07: Every refrigerated locker plant shall be maintained in a sanitary condition and conducted with strict regard to the influence of such conditions upon the food handled therein and any licensee under this chapter who fails to comply therewith shall suffer a revocation of his license.

Section 2872.08: Goods not intended for human consumption shall not be stored in a refrigerated locker except such items of animal or vegetable matter which may have been inspected and approved by the United States government.

Section 2872.09: All food must be sharp frozen before it shall be placed in a refrigerated locker, and shall be kept at a temperature of 12° to 15° Fahrenheit during the period it is kept therein.

Section 2872.10: Persons who own or operate refrigerated locker plants shall not be construed to be warehousmen, nor shall receipts or other instruments issued by such

persons in the ordinary conduct of their business be construed to be negotiable warehouse receipts.

Chap. 456.1, 1939 Code

Section 10344.1: Every lessor owning or operating a refrigerated locker plant or plants shall have a lien upon all property of every kind in its possession for all reasonable charges and rents thereon and for the handling, keeping, and caring for the same.

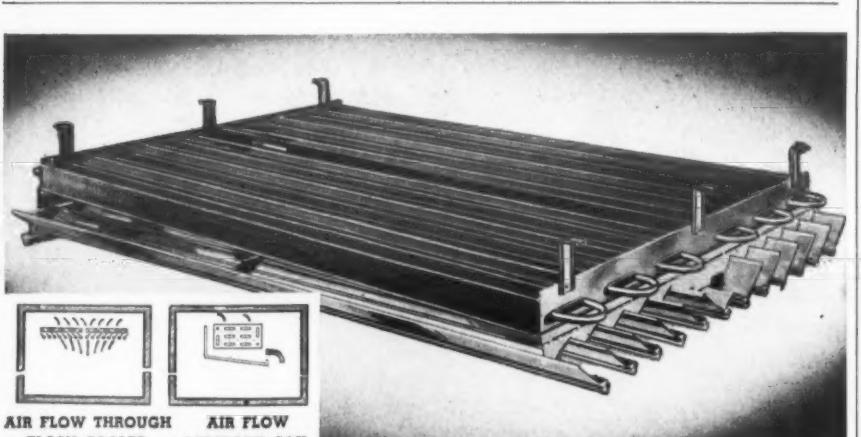
Section 10344.2: Said lien may be enforced by a suit in equity or in the same manner as a common carrier, and all provisions of chapter four hundred fifty-four (454) of the code shall govern such proceedings as far as applicable, except that notice shall be given to the owner or lessee in lieu of the persons specified in said chapter as entitled to notice.

Wis. Locker Plant Pinches Pennies— Profits Thereby

RIPON, Wis.—Taking a tip from the experience of some locker plants which render so many "minor" processing services free of charge (or practically so) that they cut themselves right out of the profit column, Frozen Foods Storage Corp. decided, when it opened its locker plant here last spring, to be "penny wise" by charging something for even the most trivial service.

So, after a careful survey of cost figures in other plants, Frozen Foods Storage Corp. set up its own schedule of processing charges. To avoid the danger of "lumping" costs into a single handling charge (a policy which usually results in a loss to the plant), this schedule was itemized down to the most minute detail, as follows:

Service	Cost
2 upper lockers, each	\$12.00 per year
3 lower lockers, each	13.50 per year
Fruits and vegetables:	
Sharp freezing per lb.	
(less containers)	\$.01
Containers only, pt. round style	.03
Containers only, qt. round style	.04
Containers only, gal. round style	.15
Containers only, 1 lb.	
square style .....	.03
Containers only, 1/2 lb.	
square style .....	.03
Containers only, 2 lb.	
square style .....	.04
Poultry, processing charges:	
Chickens, dressing .....	.10
Chickens, drawing .....	.05
Chickens, drawing and dressing.	.10
Chickens, chilling, wrapping,	
and freezing .....	.02
Turkeys, dressing .....	.20
Turkeys, drawing .....	.10
Turkeys, chilling, wrapping,	
and freezing .....	.02
Ducks, dressing .....	.15
Ducks, drawing .....	.10
Ducks, chilling, wrapping,	
and freezing .....	.02
Geese, dressing .....	.30
Geese, drawing .....	.10
Geese, chilling, wrapping,	
and freezing .....	.02
Meat processing charges, per lb.:	
Chilling, aging, cutting, wrapping,	
and freezing .....	.01%
Wrapping and freezing .....	.01%
Freezing .....	.01
Grinding meat and sausage,	
unseasoned hamburger .....	.01%
Rendering lard .....	.04
Curing meat (bacon and ham)	
not less than 25¢ each .....	.03
Smoking meat and sausage .....	.01%
Curing and smoking .....	.04
Grinding and seasoning .....	.02%
Pickling .....	.03
Cooling (only), meat not intended	
for lockers, per cwt.	1.00
Freezing ice cream, sherbets,	
ices per cwt.	1.00
Minimum charge for freezing,	
less than 25 lbs. ....	.25
Extra locker rentals per month...	1.50
Cold storage bulk, at zero temp.:	
First month, per 100 lbs. ....	.25
Following months, 100 lbs. ....	.15



FLASH COOLER

HIGH HUMIDITY COIL . . . NO food SHRINKAGE
Cold air DESCENDS VERTICALLY from each row of coils . . . through individual drip pans
RIFLING ADDS 30% TO THE EFFICIENCY . . . LOWER OPERATING COST

BUY PEERLESS FOR PERFORMANCE

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persons in the ordinary conduct of their business be construed to be negotiable warehouse receipts.

Chap. 456.1, 1939 Code

Section 10344.1: Every lessor owning or operating a refrigerated locker plant or plants shall have a lien upon all property of every kind in its possession for all reasonable charges and rents thereon and for the handling, keeping, and caring for the same.

Section 10344.2: Said lien may be enforced by a suit in equity or in the same manner as a common carrier, and all provisions of chapter four hundred fifty-four (454) of the code shall govern such proceedings as far as applicable, except that notice shall be given to the owner or lessee in lieu of the persons specified in said chapter as entitled to notice.

Tips on Effective Locker Plant Use Offered By Authority on Foods

CHICAGO—Much is yet to be learned about the food preparation and utilization aspects of refrigerated locker storage, but some light was shed on this matter when Sybil Woodruff, professor of foods in the home economics department of the University of Illinois, presented to the American Society of Agricultural Engineers the results of numerous tests made in connection with these phases of the locker storage industry.

One of the purposes of these tests, she pointed out, has been to devise some means of minimizing food waste occasioned by ignorance of the proper methods of using locker storage systems and by faulty construction of the plants themselves, and to enable locker renters to make the most effective use of this new medium of food preservation.

"It is to be expected that mistakes will be made wherever popular interest in a new scheme runs so far ahead of the laboratory's ability to accumulate facts, as has been the case with locker freezing storage," Miss Woodruff declared.

RESULTS SATISFACTORY

"And yet results must have been fairly satisfactory or the system would not have continued to spread. Patrons are apparently finding lockers successful in either one or both of two respects, (a) in reducing the cost of food and (b) in giving food of better quality than would otherwise be possible."

"It should be remembered," said Miss Woodruff, "that commercial development of the frozen food industry has also had an almost mushroom-like growth and has outdistanced the finding of facts in the laboratory.

"Experience will tell whether freezing can be as successfully practiced on a home scale, making use of locker systems, as is now the case with the commercial frozen pack."

Tests by the home economics departments of University of Minnesota and University of Illinois, she reported, showed that juiciness and flavor of meats were not impaired by freezing and did not differ measurably whether the meat was thawed before cooking or not.

"Meat in good condition when it went into storage, if held at temperatures of 10° F. or less, gave good final results and involved no new methods of cooking except for a requirement of longer time if it was cooked without being thawed," Miss Woodruff explained.

CONTAINERS COMPARED

Containers of several types are being compared, said Miss Woodruff.

The cylindrical cardboard containers being used in the experiment have the advantage of being very well adapted to packing fruits which are covered with sugar syrup, but unfortunately their shape means a considerable waste of space as the locker is filled with them.

Rectangular pasteboard cartons which can be purchased in "knocked down" form, said Miss Woodruff, permit the most economical use of space in the locker, but require the fitting of a moisture-proof lining of cellophane or parchment paper.

Tin cans have much in their favor if a can sealer is accessible, she continued, except that they, too, fail to use every available square inch of space in the locker.

Glass jars also are being tried, but they pack to such poor advantage in the lockers and create such a breakage hazard that their use is not recommended, Miss Woodruff warned.

5 CENTS PER POUND

The Farm Credit Administration has issued a recent circular on the subject of refrigerated food lockers, in which the estimated average cost

of storing meats is given as about five cents a pound, including locker cutting and freezing charges. This figure is based on a locker rental charge of \$10 a year.

"Cost per pound of storing vegetables and fruits, exclusive of the cost of the fresh produce, is a significant figure—from approximately four to seven cents, not including the extra charge which is usually made for sharp freezing," Miss Woodruff declared.

PRECAUTIONS ESSENTIAL

"It should be borne in mind," Miss Woodruff went on, "that a fresh-vegetable or fresh-fruit flavor or color cannot be secured except by paying strict attention to certain precautionary procedures. Preliminary preparation for freezing has been quite well established for commercial frozen packs, and thus far nothing has been found to indicate that any less care need be taken with locker storages.

"Someone with sufficient ingenuity to devise a square-sided leak-proof, pasteboard carton which can be used equally well for fruits and vegetables, would perform a real service, especially if he could make it to sell at a cost far under that of the ones now available.

"A device which would enable the homemaker to label cartons of different kinds of food with distinguishing colors would save her much time in a cold locker room where she is searching for the desired product.

VITAMIN C

"Several laboratories have engaged in studies of the vitamin content of frozen-pack foods of commerce. Vitamin C has been assayed often than the other vitamins and has been found to diminish some in amount during the blanching, cooling, packaging, sealing, and shipping operations, though, as one group of investigators has pointed out, equal or greater losses of vitamin C might occur during the usual procedures of marketing and handling the so-called fresh vegetables.

"After the frozen vegetable has been thawed, the vitamin C diminishes progressively with standing.

"Other vitamins have been studied less than vitamin C. It has been shown that peas and lima beans lose none of their vitamin C during either freezing or cooking; neither was vitamin B lost in peas during freezing, although 26% of it was lost during cooking. Vitamin A has been found to be unimpaired by commercial freezing of foods.

BACTERICIDAL EFFECT

"Number of bacteria in frozen meats tends to decrease as freezer storage is prolonged, about 84% having been found to have been killed off in hamburg steak under one month's exposure to the unfavorable condition of the frozen state.

"Bacteria in fruits and vegetables likewise drop in numbers during freezer storage.

"It has been reported to be practically impossible for botulism poisoning to occur through the use of frozen vegetables and fruits because the toxin is not produced under these conditions of handling until decay has progressed so far that even the least fastidious person would refuse to touch it."

Miss Woodruff warned that too much emphasis cannot be placed on the fact that after thawing has occurred, the food becomes even more perishable than it was before being frozen.

The few bacteria which survive, she declared, can multiply rapidly in the tissues which have been made more susceptible to spoilage by the physical changes of freezing.

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Commercial Refrigeration

'Tenderizing of Beef' With Sterilamps

Ultra-Violet Lamps Permit Meat To 'Age' Quickly, Then To Be Hung In Chill Room To Harden

Editor's Note: Much information concerning the Westinghouse "Sterilamp" and its possible effects upon the commercial refrigeration industry has been published in *AIR CONDITIONING & REFRIGERATION NEWS*. The following article, however, is concerned with a special phase of the application of the Sterilamp, namely, in the "tenderizing" of beef process.

Because commercial refrigeration dealers and salesmen may often be asked about the Sterilamp development by prospects, the News continues to present all available information concerning this development.

WHILE people of all ages have known the benefits of ripening meat, it remained for the modern science of chemistry to discover why meat ripens with time. Beef is composed of innumerable small muscle fibers measuring about one to five hundredths of an inch in thickness and 1 to 2 inches in length. These fibers are filled with liquid materials such as protein, fat-like substances, and amino acids.

The fibers are bound together in small bundles by a light connective tissue in which two of the most important constituents are colorless transparent substances called collagen and elastin. The resultant bundles of muscle fibers are again bound together by heavier connective tissues to form sheaths of muscle fibers. The toughness and weight of the connective tissue play the major role in determining whether the beef is tender or tough. Tenderness is also affected in lesser degree by the conditions within the sheaths of muscle fibers themselves.

Anything that softens and weakens the connective tissues results in an appreciable increase in tenderness of the beef. This softening condition occurs naturally to some extent in well conditioned animals of proper age, because the deposition of fat within the connective tissue breaks up the continuity of the tissue with a "marbling" arrangement of the fat. "Marbling" is one of the most reliable criteria of excellence used in grading meat, but even it is not a dependable guide to tenderness.

GENESIS OF RESEARCH

Some four or five years ago, C. L. Arnold, director of the Kroger Food Foundation, initiated a scientific study of beef in an effort to obtain uniform tenderness. In effect, he planned to raise all grades of beef to a tender state comparable with superior grades.

The problem was presented to Mellon Institute, a meat merchandising fellowship was established there, with Dr. Marion D. Coulter in charge.

The research men therefore concentrated their studies on the age-old technic of "hanging" beef. They investigated the process as practiced in packing houses as well as in the laboratory to discover what happens during ripening to make meat tender. They reached the tentative conclusion that the tenderizing effect is apparently due in part to the transformation of the collagen in the connective tissue, under proper conditions of acidity, to gelatine, which is itself a food material but has little mechanical strength for binding the fibers together. Thus the weakened tissue offers less resistance to the teeth.

ENZYMES SPEED UP ACTION

The investigation delved into the relatively new field of enzymes, those chemical compounds of a biological nature similar in action to the zymose of the yeast cell which brings about fermentation of sugar. Enzymes in meat become active after the animal has been slaughtered; then they speed up the chemical reactions in the meat without themselves being used up in the process.

Some of the enzymes present in beef, according to Dr. Coulter, are the following:

Peptase, arginase, tryptase, urease, peptase, hippuricase, deamidase, sali-

case, helicase, nuclease, aldehydase, peroxidase, nitrase, lipase, lecithase, amylase, maltase, glycogenase, glycolase, sucrase, arbutase, catalase, phosphatase, salolase.

As long as meat was hung in relatively low temperatures, the investigators learned, the action of the enzymes was slow and several weeks were required to complete the tenderizing process. At the chill storage temperatures between 33 and 38° F., employed in packing houses, from four to eight weeks are required to convert appreciable proportions of the collagen into gelatine. As soon as the temperature is raised, a marked increase in chemical activity is noted, but it may be accompanied by deterioration due to bacteria and mold formation.

The study also revealed that a humid atmosphere reduced the shrinkage losses in the meat. Records taken in a number of beef storage coolers showed that they maintained a relative humidity equal to only 70 to 83% of all the moisture of which the air was capable of holding at the particular temperature in the coolers, whereas the freshly cut muscle surfaces of beef are in equilibrium with an atmospheric relative humidity of 99%. In other words, at this humidity beef will not lose its moisture into the air.

It was established experimentally that maintenance of relative humidities of about 90% in the processing of beef resulted in large savings in shrinkage. However, the combination of high temperature and high relative humidity produced an ideal environment for the growth of both bacteria and molds.

Operating very slowly or not at all at chill storage temperatures of 33 to 38°, the growth of organisms became very active in the temperature range from 55 to 65°. Bacteria and mold growth were especially favored by relative humidities over 85%.

COMBATING SPOILAGE

Dr. Coulter realized early in his studies that some means of preventing or slowing up the growth of bacteria and mold would have to be provided if beef were to be ripened faster by the use of increased temperature and humidity. Sunlight is a natural enemy of bacteria, bombarding them with its invisible ultraviolet rays. These rays also provide the "sun-tan" that is the aspiration of so many seaside vacationers. But all ultraviolet light is not the same. The ultraviolet portion of the spectrum may, in fact, be divided into four classes:

(1) The region closest to the visible spectrum (which one sees in the rainbow), which is useful in some types of photography.

(2) The biologically effective radiations or the radiations most useful to the human body in preventing rickets.

(3) Radiations effective in destroying bacteria, molds, and other micro-organisms.

(4) Radiations, shorter in wavelength than the others, which convert oxygen into ozone.

"STERILAMP" INVENTED

For some years before Dr. Coulter undertook his investigation in meat tenderization, engineers and bacteriologists at the research laboratories of the Westinghouse Electric & Mfg. Co.'s lamp division were studying the possibility of making a low-current ultraviolet lamp which would not give off any appreciable heat and would limit its radiations to a band in the spectrum which would be destructive only to bacteria and harmless to human beings.

The Westinghouse research men next tested the effect of various ultraviolet wave bands on bacteria and other micro-organisms and demonstrated that the most effective band which would bring death to bacteria but would remain harmless to human beings, measured approximately 2,537 Angstrom units.

The result of these studies was development of a "Sterilamp" which

concentrates 80% of its energy in the production of ultraviolet radiation of wave-length 2,537 Angstrom units, requiring only a small amount of electrical energy, about the same as a 12-watt lamp, and possesses a useful life of about 4,000 hours.

The Sterilamp is a slender rod-shaped tube made of special glass. Ordinary glass could not be used because it is opaque to ultraviolet radiations. Electric current passes through the tube and causes a discharge in an atmosphere of mercury vapor and inert gases, producing ultraviolet radiations.

Cooperation between the Westinghouse engineers and the Meat Merchandising Fellowship at Mellon Institute resulted in the application of these new lamps to meat tenderization. Experiments in meat coolers equipped with Sterilamps disclosed that an irregular tenderization of beef occurs in six days at 52°; a uniform tenderization occurs in five days at 55°; a uniform tenderization in two or three days at 60°; a uniform tenderization in only two days at 65°; and in a few hours at 85°.

TEMPERATURES USED

The Fellowship reports that experience in small and large coolers up to 6,500-cu. ft. capacity shows the most desirable temperature for tenderizing beef is about 60° with a relative humidity of between 85 and 90% in a period of one to three days.

After being tenderized under these conditions, the beef can be kept in normal chill storage at 36° F., conforming to present packing house practice and providing a piece of beef firm enough for butchering.

Air conditioning in the processing rooms or coolers includes recircula-

New 'Light' on Making Meats Tender



Dr. M. D. Coulter (left) of Mellon Institute and Dr. H. C. Rentschler, who developed the Sterilamp, look over the Sterilamps installed in the laboratory at Mellon Institute where the experiments on quick "tenderizing" of beef were carried out. The Sterilamps make the process possible.

tion of the irradiated air to bathe all portions of the meat, and the replacement of approximately 10% of the air every hour to prevent accumulation of "raw meat" odor.

Advantages of tenderized beef under the new process include increased juiciness, uniform tenderness, retention of natural flavor, and elimination of any material loss of vitamins and other essential food substances. While only the choicest steaks and roasts could be effectively ripened by "hanging," the new tenderization process is applied to the whole of the beef carcass.

Dr. Coulter summed up the Fellowship work thus:

"The new tenderizing operation applies to all grades of edible beef. As contrasted to the 'hanging' method, which can be applied only to choice and prime cuts, its scope is much wider. The general effect is to raise the beef approximately one grade in palatability.

"Even tender beef possesses a quality termed 'graininess' unless processed or 'hung.' The individual fibers can be noted in the steak, and although tender, their presence can be definitely detected. Processed beef is uniform throughout its thickness with connective tissue so weakened that individual fibers are not in evidence."

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Published Every Wednesday by BUSINESS NEWS PUBLISHING CO. 5229 Cass Ave., Detroit, Mich. Telephone Columbia 4242

Subscription Rates U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: \$4.00 per year; 2 years for \$7.00. All other foreign countries: \$6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

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VOL. 28, NO. 6, SERIAL NO. 551
OCTOBER 11, 1939

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Trade-Ins and the Price Structure

LONG before Powel Crosley, Jr. brought out his \$350 car, people were asking: "Why doesn't someone cut under Ford, Chevrolet, and Plymouth, and bring out a car in the price class of the old Model T?"

The answer to that one is that the automobile manufacturers have learned that a base price of around \$600 is an almost irreducible minimum. Otherwise the used car market couldn't survive.

Trade-in automobiles take care of all possible low-income buyers. If new cars were available at prices around \$400, this used car business would be so seriously affected that new car sales might be stymied.

This is a lesson which the household refrigerator industry might well heed. The minimum price on new refrigerators should be held at a point which will hold an umbrella over trade-ins. With each succeeding year, those trade-ins are going to increase greatly in number.

Rather than reduce the base price, automobile manufacturers continue to give greater values year after year by improving the product. Could not this be a goal for refrigerators?

So far, the used refrigerator supply has not caught up with the demand. Campaigns in New York and Washington, for example, have shown that there is a steady flow of buyers seeking the refrigerators that are taken in on trade.

As more and more used refrigerators come onto the market, students of industry trends expect these offerings to take care of the needs of the low-income market. Rehabilitated trade-ins, selling at prices ranging from \$35 to \$85, have proved eminently attractive to families with annual incomes of \$1,000 and less.

It is also interesting to note that in spots like New York and Philadelphia, where an abundance of refinished trade-in refrigerators has been available this year,

Sears-Roebuck and Montgomery Ward have not been so successful as in other centers.

This gives rise to the belief that trade-ins—and not stripped or cheapened new refrigerators—are the answer to the challenge of the chain stores.

In this instance it is interesting to note the history of washing machines. They had their chain-store invasion several years ago. This was followed by terrific pressure on the part of department store buyers for "bargain lots" with which they could undercut Sears and Ward.

Manufacturers and distributors succumbed to this pressure. The result was a devastating crack-up in the washing machine price structure, from which the industry has never recovered.

Today, according to one of the leading figures of that industry, the washing machine business grosses \$100,000,000 annually at a net loss, considering the industry as a whole.

There is plenty of room in the household refrigerator industry for all the factors now represented. Drastic price reductions will serve to give only a temporary advantage, and no doubt will be followed by retaliatory reductions which might ruin what has been an excellent business.

The coming flood of trade-in refrigerators should serve the low-income market well, and cut well under chain store competition. And those trade-ins will have to be moved. So it well behooves those who determine price structures to consider well these factors before starting a game of give-away.

LETTERS

Claims First Open Top Display Case

C. L. Percival Co.
W. 11th and Des Moines Union Tracks
Des Moines, Iowa

Oct. 3, 1939

Editor:

It seems rather strange to be terming oneself a pioneer at this late stage in refrigeration development, but we believe we can safely make this assertion in regard to open top refrigerator cases.

Our records show the sale of an open top refrigerator case July 1, 1935—first on record, we believe—to Adams, Inc., Waterloo, Iowa. That first Percival model is still in constant use and is continuing satisfactory service for its owners. The new Percival Veg-I-Case we recently introduced embodies the fundamental principles of this case which have proved so adequate.

We are naturally very proud to have been able to contribute to the advancement of successful refrigeration design and to have inaugurated the merchandising appeal features which make this case of such definite value to grocery and market owners.

W. H. PERCIVAL,
President

Industry History In Past Issues of the News

Wallace & Tiernan Co., Inc.
Newark, N. J.

Oct. 4, 1939

Sirs:

We are wondering if you still have available a copy of the "History of the Industry" number which you published in the early part of 1937.

If so, we should like to receive a copy and will honor any invoice covering charge for same.

DAVID CRAMPTON, Engineer

Answer: In the fall of 1936, we published three issues which were devoted to the history of the industry. The first, published on Sept. 9, 1936, was known as the "10th Anniversary Number" of the News.

They'll Do It Every Time . . . By Jimmie Hatlo



THANK TO D.K.BRYANT-SALT LAKE

The Industry Pioneer number, Oct. 7, told about various individuals who had a part in the building of the industry. The Product Development number, Nov. 4, contained a survey of significant improvements in the refrigeration and air-conditioning equipment, parts, materials and supplies.

All these special issues are available at 25 cents per copy.

Numerous other issues in previous years also contain articles dealing with the early history of refrigeration.

Transferred To the East —Misses 'Old Faithful'

35 Osborne Terrace
Springfield, Mass.

Oct. 4, 1939

Sirs:

Having been transferred to the East Springfield plant of Westinghouse, due to the consolidation of the commercial refrigeration and air-conditioning departments, will you please change my address to the above.

I have been so busy arranging for moving, etc., that I have neglected notifying you before this, but I certainly miss getting "old faithful" the

past two weeks, and am waiting for them to be forwarded.

WM. ROBERTSON,
Commercial Ref. & Air Cond.
Service Engineer

Terms of Special Free Book Offer

Seay's
121 W. Portage Ave.
Sault Ste. Marie, Mich.

Sirs:

I noticed in the News that you are giving a copy of Manual SF-1 on Soda Fountains free with each six-month subscription to the News. I am at present a one-year subscriber and haven't received anything but my weekly paper, which is worth the \$4.00 I paid. Thanks for the manual.

D. C. SEAY

Answer: This new book, No. SF-1, is offered free with a new or renewal subscription and is mailed on receipt of remittance. This is the first time that a brand new book has been offered free with a short-term subscription and this offer expires Dec. 31, 1939. Present subscribers may obtain the book by extending their subscription for 6 months. The special offer is made to stimulate orders during the "off-season" period.

Toward a Mobilization of Sanity

An Editorial—Reprinted from *Nation's Business*, October, 1939

Once more Mars has kicked over the council table and leers red-eyed upon millions of men in mortal combat, and upon other millions dreading word from fronts clouded by censored propaganda. How immeasurable all the forces and influences loosed for destruction, only the holocaust of a quarter century ago can even faintly suggest.

The need of the hour is for the American people to find the wisdom to shape their course. This will be difficult, indeed, in the emotionalism of war-time psychology. To recognize our remoteness from the fearful din of battle does not signify indifference to the agony of Europe. We cannot be insensible, if we would. Our senses are assaulted with events faster than we can comprehend them. Headlines scream their tidings of victory and defeat. Radio blares its babel of comment. Rumor is rife. Mystery is in the air. Truth is hidden in blackouts. There is no moment of calm in which to think things through, but think we must.

Our national security is assured only by the exercise of sanity and the persistence of clear-headedness. We are in danger of forgetting that we ourselves are not at war. But thinking and talking are two of the surest ways to bring about the feeling that it is inevitable. Common sense would indicate that it is no more inevitable that the United States, 3,000 miles away, become involved than it was for the dozen countries like Switzerland, for example, directly in the path of the combatants in 1914, who maintained

neutrality. As an American correspondent in London says, it seems that we are more excited today than some of these same countries.

Our task is to build at home, to make America strong against any eventuality in peace or war. Defensive measures do not consist solely of more battleships and more recruits. The best possible defense is a nation whole-hearted, and as a team, producing to its fullest capacity, exchanging to the maximum the products of brain and hand.

Such a course would lay up a reserve not only of material things but also, and more important, a reserve of spiritual values brought about by a nation employing all its latent powers toward one objective, a stronger America.

This calls for patriotism of the highest order, a give and take, a tolerance, a teamwork that is real, recognizing that others as patriotic may have ideas, too. Such unity comprehends tolerance between individuals; it also includes tolerance between political groups; it calls particularly for an understanding upon the part of our government officials of the points of view of management, upon which falls the sweaty task of organizing and directing the forces of production and employment.

The business of satisfying a nation's economic wants, raising its standard of living, thus giving employment to its people, is more important today than fighting for an ideology that would make America

Millions For Defense, But Not One Cent . . .

War Department
Chemical Warfare Service
Edgewood Arsenal
Edgewood, Md.

Sept. 29, 1939

Gentlemen:

I am compiling a bibliography of sources of information on trade names. I note in the Directory of Trade Directories published by Burns Directory and Service Organization, Chicago, that you publish a directory of Refrigeration and Air Conditioning which includes a list of trade names.

I should like to include this directory in my bibliography if you have no objections, but should like to examine a copy and become personally acquainted with it before recommending it to others. Would it be possible to send me a copy of the most recent edition for examination? The postage charges, both ways, would necessarily have to be paid by you as I have no library funds for this purpose. If it may be sent as a complimentary copy for the files of our technical library, it will doubtless be of much value to our research personnel and purchasing department.

ALICE M. AMOS,
Librarian, Technical Library

over. Dictatorship pervades the world; it is to be found everywhere, distinguished only by the degree of its mastery over the affairs of life. Our executive bureaus and commissions should realize that repression and restriction create nothing, that, in every fact, they put a grievous charge upon enterprise at a time when enterprise is so sorely needed.

On the horizon of public policy new controls affecting the citizen's freedom of action are beginning to appear. They will come to definite form and substance in the name of emergency. Whatever the logic for their acceptance and application, the people must see to it that when the emergency is over, on that day the temporary loan of their independence be returned to them, and in the full measure in which it was borrowed.

Our destiny as a people transcends the plan of a political lottery ruled by administrative whim. It is still possible in this country for the citizens to determine the national interest and the commitments which will best achieve that interest. If we lose our representative government it will be because it is abandoned at home and not because of alien confiscation.

The major premise in the situation we now contemplate is that we are not at war. Our resources are intact. Life on the American plan is still normal, still constructive, still sweet, and worth the living. The best turn we can do embattled civilization is to keep our own house in order, and see to it that our common sense is not interned.

Distributor-Dealer Doings

\$100,000 Goal Set By Brooklyn Dealers

BROOKLYN—Goal of \$100,000 in dealer orders has been set for the second annual fall exposition to be sponsored by the Electrical Appliance Dealers Association of Brooklyn at the Columbus Club on Oct. 25. Orders amounting to \$50,000 were booked at last year's show, held in January, and the nearness of the holiday season is expected to boost business at this year's event.

So far, directors of the dealer association have pledged themselves to buy about \$9,000 worth of merchandise. All other dealers will be canvassed to determine what type of merchandise they intend to buy, so that distributors can arrange exhibits which will be of most benefit to them.

Reports of discount buying of appliances on the part of a large New York insurance company were relayed to the association at its last meeting by Tom Bolger, executive secretary. Despite protests, Mr. Bolger said, cooperative employees group of the insurance company still is obtaining appliances at below-list prices.

He urged dealers to cooperate in a drive to outlaw discount selling in New York, and ask them to write their state senators and assemblymen to that effect.

'Window Kitchen' Draws Prospects To New Store

HEMINGWAY, S. C.—Player & Hancock, for many years a General Electric dealer in Bishopville, S. C., has opened a new branch store here. Feature of this store is the all-electric kitchen display in the show window. Mr. Galloway, a member of the firm, will manage this new outlet.

Show Features Philadelphia Oil Burner

Promotion; Limerick Contest Builds Interest

PHILADELPHIA—An oil burner show, sponsored by the oil burner division of the Philadelphia Electrical Association, was held during the week of Sept. 11 to 16 in the Edison building here.

The show held the feature spot of an intensive six-weeks sales promotional activity in the Philadelphia area. The drive closed on Sept. 30.

Twenty-four members of the oil burner division of the association participated in the show, and in addition to oil burners, accessory equipment including controls, tanks, and fuel oil was shown.

To increase public interest in the show, the association conducted a heavy advertising and publicity campaign, utilizing newspapers as well as indoor and outdoor poster displays. As a special feature a limerick contest was held, the prize being a \$300 oil burner. Limerick blanks could be secured at the show or at the dealers and distributors who participated. All limericks had to be delivered in person at the show. To further increase attendance, 140,000 show promotion sheets were delivered door-to-door in selected neighborhoods.

Salesmen had their enthusiasm increased at a breakfast meeting held the morning of the show opening at the Bellvue-Stratford hotel. Details of the activity were explained to the salesmen by George E. Whitwell, vice president in charge.

Two Radios For Price Of One' Aids Sales In California

SAN DIEGO, Calif.—The need for more than one radio in the modern home is the basis for a "two radios for the price of one" campaign recently inaugurated by dealer members of the Bureau of Radio and Electrical Appliances of San Diego County.

On the purchase of any console type radio or combination, dealers will repair or recondition, free of charge, the purchaser's old radio, so that it may be installed in another room. This gives the buyer "two radios for the price of one."

The plan is designed to do three things: 1. Encourage the purchase of better radios. 2. Cut down troublesome trade-ins. 3. Help sell the need for more than one radio in every home.

It is claimed that the plan takes the pressure off the salesman, by suggesting reconditioning of the old set rather than jockeying as to trade-in allowance. Dealers also profit, it is said, because the average cost of reconditioning an old set is only \$5, as opposed to the 10% trade-in usually allowed on new purchases.

A booklet combining a radio log and highlights of national programs is being offered as a give-away piece to radio listeners, to get them to call at their dealers and view the new models. Tie-in window cards also are available, and large-space newspaper advertising will be continued throughout this month, under Bureau sponsorship.

Jim Creech Joins Griffin

LUMBERTON, N. C.—Jimmy Creech, former Carolina Power & Light Co. salesman, is now with Allen Newberry and Bob Griffin of Griffin Home Appliance Co.

NRDGA Moves To Check Unfair Price Advances

NEW YORK CITY—In an action designed to protect the public from unjustified price advances, the board of directors of National Retail Dry Goods Association has authorized appointment of an emergency committee of 36 leading merchants throughout the country, to keep a close check on price movements and cooperate with other business and public groups wherever the objectives of keeping out unwarranted price advances can be served.

"Notwithstanding the fact that retailers alone do not hold the key to the price structure, we are determined to employ our efforts as far as we possibly can to protect consumers against unwarranted price advances," the association declared in a statement of "policy and action" announcing formation of the emergency committee to work on price maintenance.

"In order to effectuate the policy expressed herein, an emergency committee will be appointed for the following purposes:

"1. To gather facts and information relating to price changes.

"2. To consult and cooperate with other bodies having similar objectives.

"3. To formulate further policies and recommend such further action as it may deem necessary."

618 Electric Refrigerators For Youngstown Housing

YOUNGSTOWN, Ohio—Purchase of 618 electric refrigerators by Youngstown Metropolitan Housing Authority has been announced by Moock Electric Supply Co., local Westinghouse distributor. The refrigerators will be installed in the Westlake low-rent housing project, one of the largest U.S.H.A.-aided low-rent housing projects in Ohio.

The refrigerators will be 4-cu. ft. models, and will be installed before the end of the year. Occupancy in the project will start late this fall, and rentals will be from \$19 to \$22.25, including all utilities.

San Diego Appliance Show Opens Nov. 28

SAN DIEGO, Calif.—The seventh annual Electrical Show, sponsored by the Bureau of Radio and Electrical Appliances of San Diego County, will be held in Balboa Park here from Nov. 28 through Dec. 3.

Any product having to do with electricity is eligible for display in the event. "Christmas Tree Lane" again will be a feature of the show, and entertainment and educational exhibits will be shown. Last year's show attracted 100,000 persons in its six-day run.

Memphis Dealers Gain Use Of Utility's Showrooms

MEMPHIS, Tenn.—The city of Memphis has turned over to local appliance distributors and dealers the showrooms formerly used by the Memphis Power & Light Co. for displaying electrical equipment. The city took over the utility's property in the recent TVA sale.

No specific schedule of displays has been set, but it is expected that new models will be stressed and displays maintained in accord with seasonal promotions.

Gas heating is being stressed at present, with three windows being devoted to heaters, floor furnaces, and gas conversion equipment.

Inside display rooms are entirely taken up by appliance showings, including refrigerators, ranges, and laundry equipment. Signs on each appliance list all stores handling that particular make of unit.

'School's Out' For 43 Appliance Salesmen

MILWAUKEE—Forty-three members of the sales organization of Morley-Murphy Co., electrical appliance distributorship here, have graduated from Kelvinator's National Salesmen's Institute, the company announced recently.



BANTAM CONVERTIBLE COUPE

•
OTHER MODELS:
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ROADSTER
COUPE
STATION WAGON
PANEL TRUCK
PICKUP TRUCK

WHAT A SELLING STORY!

Big car performance . . . fine car finish . . . small car economy and low cost. Powerful 4-cylinder, water-cooled motor—vibrationless, quiet, sturdy. Complete line of beautifully styled cars, trucks and Station Wagons. The climax of 10 years manufacturing experience by America's pioneer small car maker . . . 10 years of building cars whose dependability and economy is proven by the records of thousands of owners—owners who report 50,000 to 200,000 miles with gasoline economy of 42 to 56 miles per gallon.

SUPER 4 BANTAM

WORLD'S FINEST SMALL CAR

AMERICAN BANTAM CAR COMPANY
Butler, Pennsylvania. Cable Address: Bantamear

SEE BANTAM AT THE AUTO SHOWS

'Give Us Room' Is Cry of Two Dealers

FLORENCE, S. C.—Electric Sales & Supply Co., General Electric dealership here, has moved into new and larger quarters. This firm is headed by "Herb" Brown.

LIBERTY, N. C.—R. P. Smith, General Electric and Universal appliance dealer here, has moved into a new store where he can more conveniently display his full line.

New Kelvinator Distributor

JOHNSONVILLE, S. C.—The Carter Radio Shop has been appointed Kelvinator dealer here by Carolina Sales Corp., Kelvinator distributor in the Carolinas.

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FREE Bulletin



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SERVICE NEWS

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Gentlemen: Please send me the current issue of "ARTIC" Service News and put my name on mailing list to receive future issues.

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Company..... Position.....

Address..... City..... State.....

Service Men's Problems

Home-Study School Graduates Rise To the Defense of Their 'Alma Mater'

What Started This Lively Discussion

This discussion of "Service Men's Problems" has been running in the News for nearly three months. It started with the publication in the July 19 issue of two letters written by Ralph R. Link, refrigeration service man of Mayfield, Ky. Mr. Link is 33 years old, married, and had put in 12 years as a monotype operator before taking the home study course and laboratory work given by the Refrigeration & Air Conditioning Institute in Chicago. Mr. Link is now operating as an independent service man and reports that he has been kept busy in radio and refrigeration repair work. He has invested \$150 in tools and equipment.

In the Aug. 2 issue was published a letter from O. A. Fusch of North Plainfield, N. J. who was inspired to tell about his experience as a result of reading Mr. Link's letter. Mr. Fusch is 35 years old, married, and had several years' experience in manufacturing plants, also in the building and contracting field. He took the course of study given by Chicago Technical College and also attended 36 sessions of the refrigeration course given by L. K. Wright at the New York Y.M.C.A. Mr. Fusch reported that he had written numerous applications for a job without success and was beginning to wonder what was the matter with the industry.

In the Aug. 9 issue was published a letter from Donald L. Nelson of Fairmont, Minn. Mr. Nelson is 29 years old and had worked 10 years as a stereotyper in a daily newspaper plant before taking the course of study and laboratory work given by Refrigeration & Air Conditioning Institute of Chicago. Mr. Nelson had also failed to find a satisfactory

job and expressed disappointment in the results of his investment of time and money.

However, it appears that the negative views which appeared in the above-mentioned letters were only one side of the story. Others have contributed their opinions and experience, indicating that they are well-pleased with their training and treatment by employers.

Some of the letters contain constructive suggestions regarding ways and means for beginners to get started in a new industry.

It is evident that this discussion is of great interest to many readers, not only students and service men but also to manufacturing executives. For example, the president of one of the largest concerns in the industry has informed the editor that he has read every letter in the series and is keenly interested in the various viewpoints regarding jobs and attitudes toward employers.

They Are Honest and True To Their Word

Burlington, Iowa
214 N. Main St.
Oct. 2, 1939

Editor:

I am a constant reader of AIR CONDITIONING & REFRIGERATION News, and enjoy it very much. I am especially interested in reading the letters from service men who have taken the R.A.C.I. correspondence course.

I also am an R.A.C.I. graduate, graduating two years ago. I am now with the J. H. Ewing & Son Dist. Co. who handle Philco and Gibson household refrigerators, and Philco Cool Wave room coolers.

Three months after I became an R.A.C.I. student I obtained a job servicing household refrigerators, since then, I have serviced and installed commercial as well as household refrigerators, and am now working for my fourth firm.

It is true, I started at a low salary, but that increased as I went along.

In the letters that you have published I notice that most students are putting the fault on the school for their not having a job in the refrigeration field. In my case, R.A.C.I. have lived up to their word, and done all they said they would. They have tried and did help me to obtain a job.

R.A.C.I. does not guarantee their students a job when they graduate, but they are spending thousands of dollars yearly in advertising; sending letters and booklets to manufacturers, distributors, and dealers, just to place their graduates.

Students who claim that R.A.C.I. guarantees a job after graduation probably have been misled by the field representative with whom they enrolled. I happen to know that some field representatives did misrepresent R.A.C.I. and that they were soon dropped. The representative that called on me told me that R.A.C.I. does not guarantee a job after graduation; before I signed the enrollment blank.

I still think that R.A.C.I. is the best; and that they are honest and true to their word. I pull for them and shall continue to do so whenever possible.

I also think that most all graduates can get work in the refrigeration and air-conditioning field if they try hard enough, and get their mind set on their work rather than the starting salary.

LAWRENCE OETKEN

Really Do a Grand Job Of Teaching Refrigeration

The Conditionaire Co.
Paragould, Ark.

Oct. 4, 1939

Editor:

Enclosed is our check for \$4. Now, here are my views on the R.A.C.I. situation:

There are definitely two sides to this controversy. The institute is doing a fine job of training men. When they get a student with an intelligent mind and a little common sense, they really do a grand job of teaching him refrigeration and air conditioning. The student himself should have enough common sense to realize that the institute cannot place him, although many of them do not have.

I didn't. Yet what good does it do to stand off and "holler" about it? Why depend on someone else to do the work? It seems to me that if someone else does the work, they are entitled to the reward. Personally, I'd much rather do the work myself and get what is coming to me.

The institute can't guarantee to pound knowledge into a man's head. All they can do is give him a damned good chance to learn the business.

V. H. WHEELER

Didn't Expect to Get a Job On a Silver Platter

Bartley, W. Va.
Sept. 26, 1939

Sirs:

Enclosed find 20 cents for which send me a copy of the AIR CONDITIONING & REFRIGERATION News for Sept. 13, 1939. I lost my copy and wish to have a complete set of the articles concerning carbonators.

I also am finding the discussions about service men's problems interesting as I am one of those who are taking a course from the Refrigeration and Air Conditioning Institute. I, however, don't believe that the picture is as gloomy or as bright as some paint it. After finishing my course, I don't expect to have a job handed me on a silver platter. I have had plenty of hard knocks so far and don't think that a few more will hurt me.

WILLIAM T. MILLER

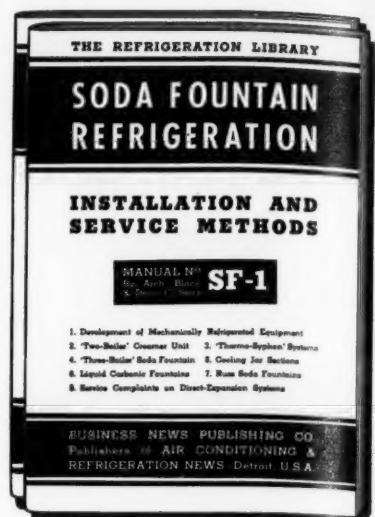
Correction

Ulrich H. Wipperman, 68 Tonelle Ave., North Bergen, N. J., whose letter defending the R.A.C.I. was published Sept. 13, calls attention to an error in our interpretation of his penmanship. His first letter read:

"I have just finished my home study course. It took me one year and four months. Going at a fast pace and earning many an A grade, etc."

As published, it read: "Going at a fast pace and earning money and an A Grade."—Editor.

Just Published



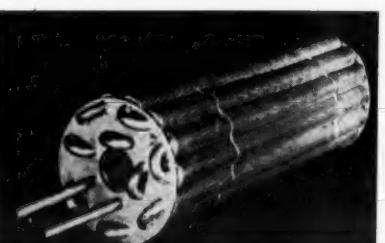
Manual No. SF-1

SODA FOUNTAIN REFRIGERATION. This is the first of a set of two new manuals that every service man will want. Installation and service instructions on mechanically refrigerated soda fountains. (The second manual, No. SF-2, will be ready in November.)

CONTENTS: Chapter 1—Development of Mechanically Refrigerated Equipment, Chapter 2—"Two-Boiler" Creamer Unit, Chapter 3—"Thermo-Syphon" System, Chapter 4—"Three-Boiler" Soda Fountain, Chapter 5—Cooling System for Jar Enclosure Section, Chapter 6—Liquid Carbonic Fountains, Chapter 7—Russ Soda Fountain System Using Direct Expansion, Chapter 8—Analysis of Service Complaints on Direct Expansion Fountains. Price \$1.00 postpaid in U. S. A.

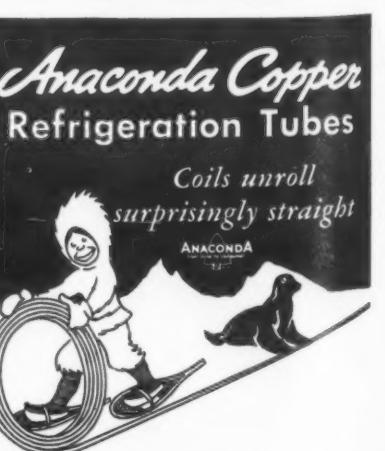
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Whether your requirements are large or small, standard or special, Servel engineers can help you solve your most vexing problems of commercial refrigeration or air conditioning. Write today to Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Ind.



Service Analyzer Is A Help In Impressing Customers As Well As a Technical Aid

SCRANTON, Pa.—A completely mechanical service analyzer has taken the guesswork out of refrigerator trouble tests for Scranton Norge Service, refrigerator service firm here, and the speed and accuracy of the trouble shooting has greatly increased business and customer satisfaction, says S. A. Hemmerly, service business owner who designed and built the portable testing device.

Mr. Hemmerly calls his service invention the "Frigid-Eye." It is a compact, portable device that is carried on service calls, connected to the ailing refrigerator, and shows by a series of gauges the electrical or mechanical defects. All necessary testing devices are grouped on the panel of the analyzer and a quick checkup of the readings establishes the trouble and the service man can start the repairs where the defect is indicated.

ELECTRICAL TESTING

The upper half of the board is used to check the electrical circuit of the refrigerator. An ammeter and a voltmeter are controlled by switches at the top of the panel. When the line from the refrigerator is plugged into the board, these gauges show the current being used, and if the common complaint of excessive power costs shows up on the panel, the service man can check back for the trouble.

A series of colored signal lights is used in this check. The red light shows that current is passing through the meter, a green signal shows that both a.c. meters are in use, and the yellow signal is used as a continuity test.

A thermometer and humidimeter show at a glance the room conditions under which the refrigerator is operating. Mr. Hemmerly intends to add a gauge that will give the temperature of the refrigerator, acting as a further check.

SHOW PRESSURE, FLOW

The lower half of the panel is equipped with gauges and indicators to test the refrigerating efficiency of the unit. On one side are ports connecting to the valve head, the refrigerant line, and the suction valve. A pressure gauge and a compound gauge test the system.

Two liquid indicators located in the center of the panel are used to show the flow in adding refrigerant or oil to the system. One indicator is connected to the head line and the other to the suction side of the system. In charging or purging the system a valve manifold at the bottom of the panel is used for a control. This valve manifold is connected to the ports during the charge.

CAN SHOW CUSTOMER

Mr. Hemmerly admits that there is no new idea in testing devices included in his system, but in grouping on one board the devices ordinarily used separately he has been able to effect an instant check that is at once accurate and efficient. Both electrical and mechanical defects showing up at a glance has vast advantages over the individual testing system, he holds.

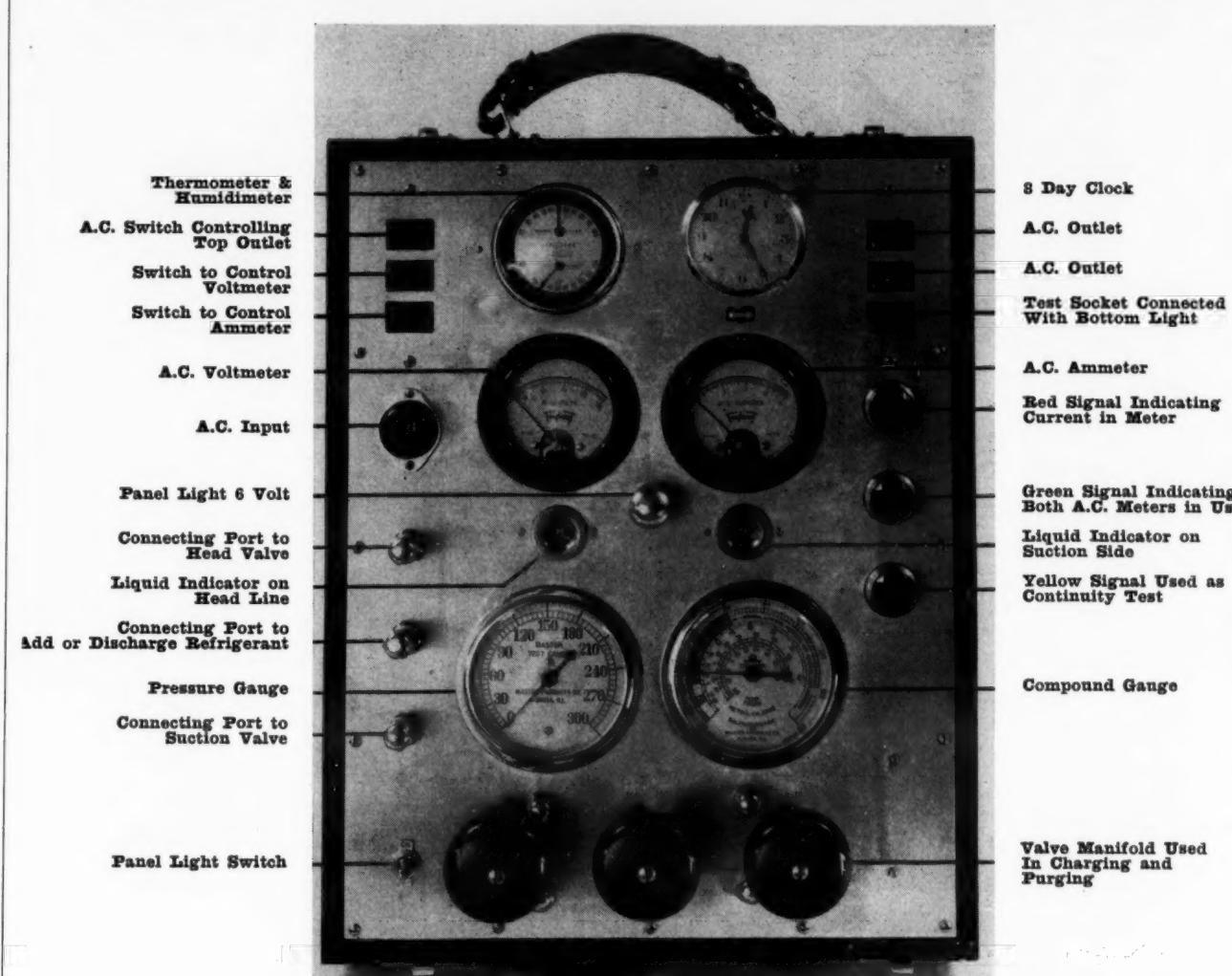
In addition to the advantage given the service man in being able to locate the trouble much faster, there is a distinct advertising advantage in the device, Mr. Hemmerly says. The service customer can be shown on the panel just what the trouble is. When the service is finished the "Frigid-Eye" is again hooked up to the refrigerator and the customer can "read" the repair. This gives definite proof that the trouble has been eliminated and leaves the customer entirely satisfied that the service man has not been "shooting in the dark."

TELL ABOUT IT IN MAIL

The firm has capitalized on the exclusive device. Naturally, satisfied customers are good advertisements, but the firm has gone further and incorporated the "tested service" in a series of direct mail promotions for new business.

From a list of customers and prospects these mailings go out

Efficient 'Frigid-Eye' Convinces Service Customers



regularly and play up the advantages of their testing device. Service is offered on all makes of refrigerators, both domestic and commercial. A well-equipped service shop is an important part of the setup. Here, three men are employed to take care of the service work that cannot be done on calls. The shop is equipped with parts and machines to take care of almost any refrigeration repair. These facilities and the offer of day and night service are emphasized in the mailings.

The mailings are not the hit and miss variety. Some six thousand names built up through nine years of service work make up the card index from which the names are chosen. New names are constantly being added by going over the current bills.

Currently the firm is going after the commercial business in a big way. For mailings to these places the telephone directory is combed for a list of hotels, beer gardens, restaurants—any place that may be in need of refrigeration service. Mr. Hemmerly is a firm believer in the mail appeal, and by choosing the list carefully and spacing the mailings according to the season or the customer he gets a satisfying return.

The important thing in increasing service business is to keep after all possible prospects, says this service business owner, and once the busi-

ness is landed to give complete satisfaction.

"We are equipped to give that satisfaction," he says. "We are a 100% service organization. All of us eat, talk, and even sleep service. We want all our customers to be satisfied even if we take a temporary loss. Return business is our life blood."

The firm has recently gone in for reconditioning used refrigerators. All the work is done at the shop, including the complete reconditioning of the cabinet finish.

A paint shop has been added to the equipment. The same careful attention to details is needed to make this end of the business a paying one, says Mr. Hemmerly. While he has not the room to do a volume business in reconditioning, some sixty boxes were sold during the last season. A trailer is used for the delivery of the boxes which are advertised in classified columns.

Mr. Hemmerly plans each part of the service business and its expansion. He supervises the service, plans the campaigns for new business, and trains his men to do service the way he wants it done—with satisfaction. That is why he is sold on his portable testing apparatus, for, he says, it checks the refrigerator, checks the service man, and receives the double check from service customers.

Simmons, Creviston Get New Posts With Crane

CHICAGO—H. H. Simmons, advertising manager of Crane Co., has been promoted to manager of advertising and sales promotion, succeeding Russell G. Creviston, who assumes a new position, director of trade relations.

In addition to directing advertising, Mr. Simmons will supervise the company's related sales services: sales promotion, catalogs, displays and exhibits, the two Crane magazines, and publicity.

Mr. Simmons had 15 years experience in advertising and merchandising a wide variety of industrial and building products before joining Crane four years ago.

In addition to directing Crane's trade activities in both the industrial and plumbing and heating fields, Mr. Creviston in his new capacity will also develop certain phases of market research.

He has been director of advertising and sales promotion for Crane Co. for the past 10 years, and is a member of the public relations committee of the National Association of Manufacturers and of the construction and community development committee of the United States Chamber of Commerce.

Monsanto Chemical Co. Puts Office In Detroit

DETROIT—To handle expanding business in the motor car and appliance industries, the plastics division of Monsanto Chemical Co. has established a general branch office in the Union Guardian Building here to serve its clients in the Michigan-Ohio-Indiana industrial area.

Branch manager is George C. Gress, a veteran of the plastics industry, who has been assistant general manager of sales in charge of the molding compound, sheet, rod and tube, and nitration manufacturing departments of the then Fiberoid Corp., which was absorbed by Monsanto in 1938.

Jack Trees Now With Erie Enameling

ERIE, Pa.—Jack Trees, formerly in charge of enameling control for the Norge division of Borg-Warner Corp., is now associated with the Erie Enameling Co. here.



Ask for
VIRGINIA
EXTRA DRY
ESOTOO
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V-METH-L

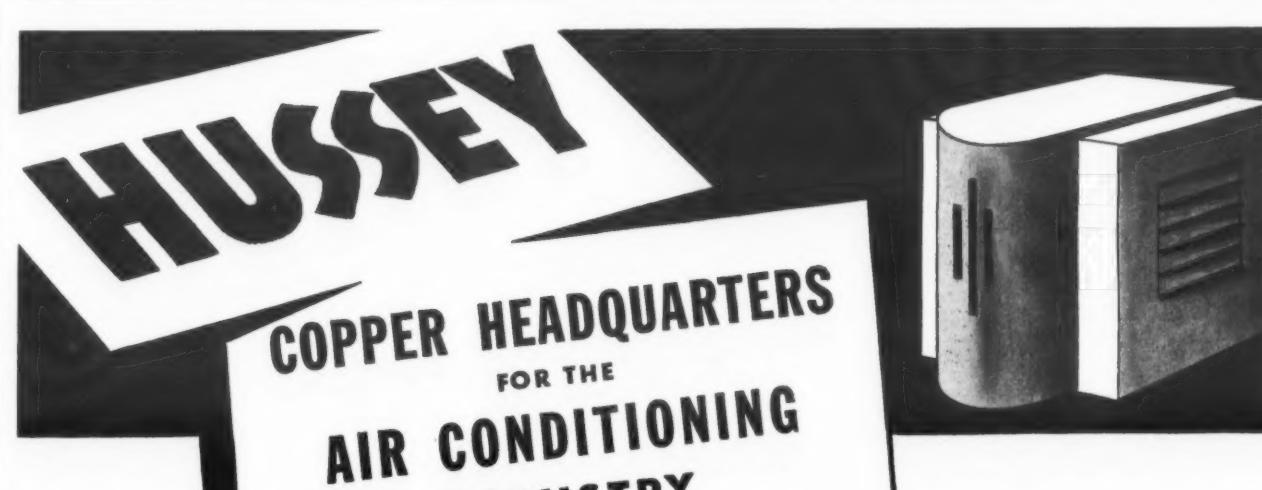
Be doubly sure

protect them

with

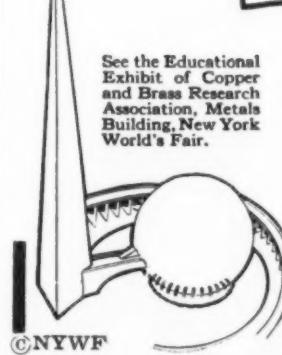
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Because of the complete facilities offered by Hussey from mine to warehouse, you will always find it both economical and convenient to centralize your copper requirements with this organization.

Backed by a nationwide sales and service organization with conveniently located, well stocked company warehouses in the larger



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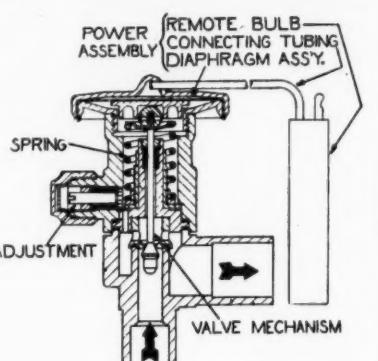
Copper **HUSSEY** Brass

Answer To a Problem

Editor's Note: On this page is the first of a series of articles about the causes of the "flood back" of refrigerant to the compressor in refrigerating systems, and the ways in which this trouble can be remedied by correct engineering practices.

The articles were prepared by J. E. Dube and F. M. MacDougall, engineers of the Alco Valve Co., and the information represents the results of research in the field and in the laboratory.

This instalment outlines the general nature of the problem, points to the three major causes, and discusses the first one—poorly engineered control equipment.

Fig. 1—The Thermo Valve**THE BUYER'S GUIDE**

53 YEARS OF SERVICE 1886-1939

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Quality built; corkboard insulated; porcelain clad; beautifully streamlined. Cooling system is second to none.

Write for attractive prices, literature and Distributor's proposition.

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HENRY
AUTOMATIC
PRESSURE
RELIEF VALVE



**ANGLE TYPE WITH PUSH ROD FOR
EMERGENCY RESEATING**
Has safety code approval. Provides instant and accurate pressure relief. Automatic closing and reseating. Angle construction and push rod permit reseating without removing valve or pumping down system. Used from either high or low side of system. Pressure range: 90 to 250 lbs.

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MORE Sales With **Cross-Fin Coils**

You Make More Profits—More Customers with the famous LARKIN CROSS FIN COILS. Continuous Aluminum Fins—Imbedded Fin to Tube Contact—Silver Welded—All Types. Sell the leaders of the Industry. See Your Jobber or Write Today

LARKIN COILS, Inc. General Offices and Factory 519 Fair Street, S. E., ATLANTA, GA.

Branch Factory, 57 East Eleventh St., New York City

ACE HARD RUBBER LOXIT DOORS AND COMPLETE ASSEMBLIES

Save time and labor in fitting and assembling. Practical cooperation with display cabinet builders.

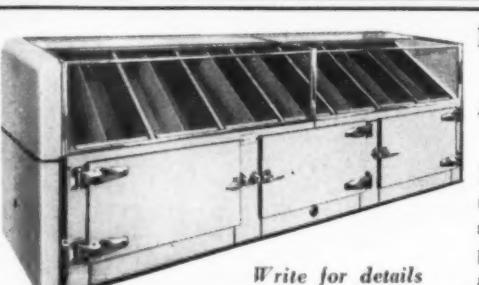
AMERICAN HARD RUBBER COMPANY
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Every Food Merchant A Prospect!
For This New Self-Serve Produce Case

It's OPEN! The customer can reach right in—no doors to slide—and embodies a new principle of refrigeration (Pat. appl'd for).

SANDERS BUTCHER SUPPLY CO.

2755 W. Fort St., Detroit, Mich.



Write for details

Cause and Prevention of 'Flood Back' on Systems Using Thermo Expansion Valves

1. When Cause Is Poor Refrigerant Control

By J. E. Dube and F. M. MacDougall, Alco Valve Co.

One of the most prevalent faults of a poorly designed refrigerating system is the return of liquid refrigerant to the compressor. "Flood back," as this difficulty is commonly referred to, does not only reduce compressor capacity, but may actually cause serious damage to the refrigerating equipment.

Broken valves and crankshafts are frequent results of "flood back." In many cases it is also accompanied by the removal of oil from the compressor, which in turn may cause burned-out bearings and other lubricating difficulties.

Most of the trouble has been experienced on systems fed by thermostatic expansion valves, for on really flooded systems surge room in some form is provided. "Flood back" has always been a matter of concern to refrigerating engineers, although it was of relatively small importance in the early ammonia days.

Recently, however, the problem of "flood back," which may occur either at the beginning of an operating cycle after a period of shut down as well as during the running cycle itself, has been reaching more serious proportions. This may be attributed to the fact that early ammonia systems were equipped with an abundance of evaporating surface and frequently also with surge drums or accumulators. Furthermore, these systems were operated at relatively high superheats.

the refrigerant of the particular system to which the valve is to be applied.

There are three forces governing the operation of a thermo valve. First, there is the pressure of the thermostatic charge within the power element which tends to open the valve. This pressure obviously varies with the temperature of the remote bulb, an increase of the bulb temperature causing a greater opening tendency of the valve.

Opposed to this opening force are the combined efforts of the closing spring and the suction pressure of the refrigerating system. While the spring force remains constant for any given adjustment, the second closing effort caused by the suction pressure acting upon the diaphragm obviously increases with an increase in suction pressure and vice-versa.

Object of the thermo valve is to maintain a certain pre-determined amount of superheat of the suction gas at the point of application of the remote bulb. A vapor is said to be superheated whenever its temperature is higher than the saturation temperature (boiling point) for that particular pressure. The amount of superheat is, of course, the temperature increase above the temperature of saturation at the existing pressure.

Let us consider a quantity of refrigerant sealed in a glass test tube for example. We can observe the

against the return of any liquid refrigerant to the compressor is the maintenance of superheated suction gas at the outlet of the evaporator.

Let us now consider a refrigerating system operating on "Freon-12" at 37 lbs. suction pressure and equipped with a thermo valve. The "Freon" temperature of saturation at 37 lbs. pressure is 40° F. As long as any liquid exists at this suction pressure, the refrigerant temperature will be 40° F.

As the refrigerant moves along the coil, the liquid boils off into a vapor and the amount of liquid decreases until at point "B" in Fig. 2, all of the liquid has evaporated due to the absorption of latent heat from the surrounding air. The suction gas continues along the coil and remains at the same pressure (37 lbs.), but due to the absorption of sensible heat from the outside and the heat of friction its temperature increases.

By the time the suction gas reaches the end of the evaporator "C" its temperature is 50°. This suction gas is now superheated and the amount of superheat is, of course, 50°—40° or 10°. The superheat in the suction gas depends upon the amount of refrigerant being fed to the coil and the rate of evaporation or the load.

Let us now consider the three operating forces of the thermo valve. The remote bulb is approximately at suction gas temperature which is 50° F. The corresponding saturation pressure of the "Freon" confined within the power assembly is 46.7 lbs. per sq. in.

If the diaphragm has an effective area of 1 square inch, the opening force on the valve will actually be 46.7 lbs. The suction pressure is 37 lbs. per square inch and consequently the opening force exerted on a diaphragm of 1 square inch effective area is equal to 37 lbs.

If the thermo valve is to maintain a superheat of 10° F., it is necessary that the three operating forces are in equilibrium at this point. This condition is met if a spring force of 9.7 lbs. is applied. Thus, the opening effort of the thermostatic charge amounting to 46.7 lbs. is balanced by the sum of the suction pressure and closing force of 37 lbs. and the spring force of 9.7 lbs.

If the superheat in the suction gas should increase (as in the case of an increase in load) the bulb temperature and, therefore, the pressure within the power element would also increase, causing the valve to open sufficiently to restore the superheat to 10°. Conversely, if the superheat should decrease (as in the case of a reduction in load) the bulb temperature and power element pressure would lower and the valve would move in the closing direction.

The stability and quality of the superheat control depend a great deal on certain operating characteristics of the thermo valve.

The sensitivity of a thermo valve is exemplified in the amount of valve opening per degree change of superheat. Likewise, it may be expressed as the number of degrees of change of superheat required to operate the valve from closed to wide open.

There are certain limiting factors governing sensitivity. Too high a sensitivity, that is, a very small operating differential of the valve, may result in unstable control with undesirable "hunting" of the control point. Too low a sensitivity, however, that is, a large operating differential, will result in wide swings and changes of the superheat control with varying loads, too high a minimum superheat setting at full load, and furthermore, it necessitates a high and undesirable pressure build-up to close the valve.

In order to take fullest advantage, however, of the proper sensitivity of a well designed thermo valve, it is of utmost importance to use a valve of proper capacity rating. Obviously, undue oversizing will cut the full load opening differential to a minimum and will result in undesirable super-sensitivity.

Next important characteristic of the thermo valve is its responsiveness.

Factors In Refrigerant Control Functioning

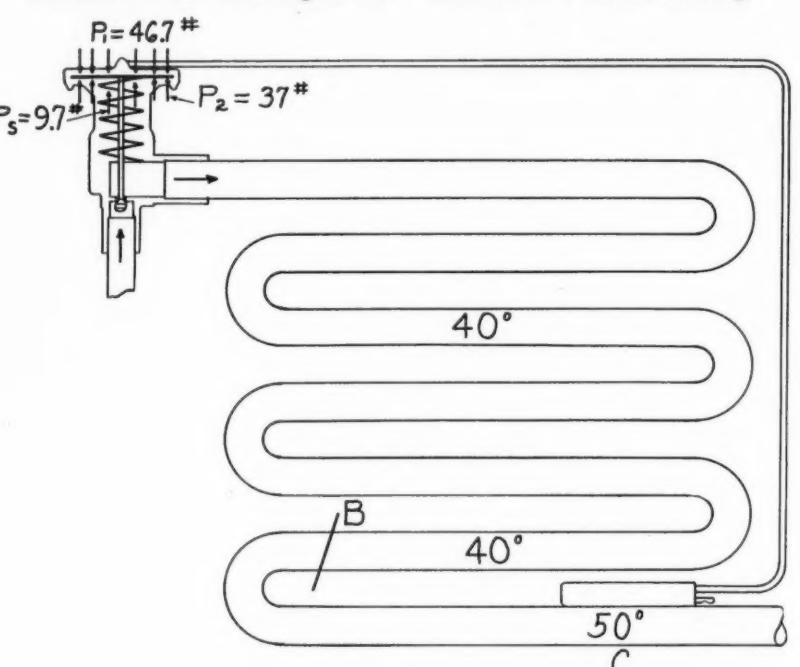


Fig. 2—Pressure relationships at the expansion valve in a refrigerating system, and temperature relationships in the evaporator. Past the point "B" in the coil the suction gas is superheated, and this superheat is the principal factor in refrigerant control.

Because of the increased cost of finned copper evaporators over the wrought iron pipe (used in ammonia systems) it has necessarily become increasingly important to use a minimum evaporator surface and to operate at relatively low superheats in order to obtain maximum coil capacity. The present trend toward widespread use of parallel pass evaporators, fed through some form of header by a single thermo valve has in many cases also given rise to "flood back" difficulties.

In the light of these contributing factors a thorough analysis of the problem of "Flood back" reveals that this difficulty can be attributed to three major causes:

1. Poorly engineered control equipment.

2. Faulty application and inadequate use of controls.

3. Faulty evaporator design.

Before analyzing the important thermo valve characteristics it may be well briefly to investigate the construction and basic functioning of a thermo valve.

The thermo valve consists of a valve mechanism, an adjustable closing spring, and a so-called power element comprised of a diaphragm or bellows assembly, a remote bulb, and connecting tubing. (See Fig. 1.) The power element is charged with a volatile liquid, usually the same as

liquid refrigerant on the bottom of the tube. The space above the liquid level is filled with saturated refrigerant vapor. We can further observe that upon heating up of the test tube more liquid is going to vaporize and the liquid level will drop until finally all the liquid has been transformed into vapor. Since there is no more liquid to be vaporized, any further heating of the refrigerant will result in superheating of the vapor.

Obviously the same reasoning holds true for a refrigerating system. As long as there is liquid refrigerant present in any part of the evaporator the refrigerant vapor adjacent to this liquid will be saturated. However, in the portion of the evaporator where complete vaporization of the liquid has taken place, further absorption of heat by the refrigerant will result in superheating of the vapor.

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No matter what the application may be... if it calls for comfort cooling, product cooling, air-conditioning, or commercial refrigeration... we can supply dependable equipment to fit the need. Write for details of our attractive distributors' arrangement.



Department Stores

Leased Departments—Not a Side Issue

Outside Agency Can't Succeed Without Store's Aid; Recognition of Mutual Aims Cited As Need

NEW YORK CITY—The success of a leased department in a retail store depends on a recognition of mutual interests between the store management and the leased department, Arthur Lazarus of Day & Zimmerman, Inc. told members of the International Association of Electrical Leagues at their meeting here last week.

"An appreciable number of leasing arrangements which had everything in their favor on paper turned out to be failures because of a lack of cooperation on the part of the leasing organization, the store, or both," said Mr. Lazarus.

"Among the most successful merchants, the leased department is frowned upon on the grounds that a store management should be able to operate a department as well as any outsider," he said. "These merchants see no justification for two potential profits, one to the store leasing the department, and the second to the outsider who operates it."

VIEW FOR AND AGAINST

"In other directions, a separation of functions is looked upon as a sign of progress. When stores found the utility companies could furnish power and steam requirements more cheaply than these could be self-produced, private power plants were given up. And the store's own delivery system, which was long a source of pride and reverently regarded as of considerable advertising value, has given way in a number of cities to the economies of consolidated retail delivery."

"These illustrations, of course, deal

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of Air Conditioning & Refrigeration News published weekly at Detroit, Mich. for Oct. 1, 1939.

State of Michigan [ss.]

County of Wayne } Before me, a notary public in and for the State and county aforesaid, personally appeared F. M. Cockrell, who, having been duly sworn according to law, deposes and says that he is the Publisher of the Air Conditioning & Refrigeration News and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher: F. M. Cockrell, 18090 Wildermead, Detroit, Mich.

Editor: George F. Taubeneck, Webster Hall Hotel, Detroit, Mich.

Managing Editor: Phil B. Redeker, 30 E. Philadelphia, Detroit, Mich.

Business Manager: J. R. Adams, 8616 Terry, Detroit, Mich.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

F. M. Cockrell, Detroit, Mich.

Margaret B. Cockrell, Detroit, Mich.

M. Helen Cockrell, Detroit, Mich.

George F. Taubeneck, Detroit, Mich.

Phil B. Redeker, Detroit, Mich.

John R. Adams, Detroit, Mich.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the name of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing all material facts so far as they then know or believe about the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect in the said stock, bonds, or other securities than as so stated by him.

(s) F. M. Cockrell

Sworn to and subscribed before me this 29th day of September, 1939.

(s) Geo. C. Gildemeister

(My commission expires April 20, 1941.)

their best combine daring, speed in adjustment, and the eschewing of non-essentials.

"If we can offer a suggestion to manufacturers, it is to this effect; if you intend to operate leased departments, do not regard the development as a side issue. That course will be neither fair to the manufacturer or the retail establishment. Department leasing, if it is to succeed, demands competent organization on the part of lessee.

"I believe that leased department sales have somewhat increased in the last 10 years," he stated. "The following table gives a comparison of leased department sales to total sales in various department store groups, as compiled by Teele for 1930 and by the Controllers' Congress of the National Retail Dry Goods Association for 1937:

Firms with Total Net Sales of	Leased Department Sales to Total Store Sales	
	1930	1937
Less than \$ 500,000	6.5%	14.2%
\$ 500,000-\$ 2,000,000	8.9%	11.4%
\$ 2,000,000-\$ 4,000,000	7.7%	8.2%
\$ 4,000,000-\$ 10,000,000	5.0%	5.7%
\$ 10,000,000 or more	1.9%	4.4%

"The foregoing table shows a relative increase in each size group," Mr. Lazarus pointed out. "Corresponding specialty store percentages taken from the same sources show a decline in leased department sales from 8.3% of total sales in 1930 to 7.2% in 1937.

STORE MAY TAKE OVER

"While there has been a measure of growth of leased departments, the operators of these departments have

no true security. The relationship may be terminated at any time upon the expiration of the lease. For example, one department store executive writes, 'It will doubtless interest you to know that we have recently taken over our most important leased department which did approximately 9% of our total volume. It has been leased for about 30 years. On July 1st the lease expired and we are now running this department quite successfully ourselves.'

"The weight of judgment of those who are influential in forming department store opinion has been definitely set against the leasing of departments and this feeling has become manifest in the larger stores and may very likely percolate through to the stores of medium sized and small volume," he continued.

SEPARATE, BUT DEPENDENT

"We have deliberately taken an attitude favorable to the leased department because this distributing agency has had a very poor press and its advantages seldom stated with emphasis. Those who make it a business of operating leased departments now represent a substantial capital investment—in the wearing apparel, shoe, fur, millinery, beauty parlor, and other fields. The time is appropriate for these firms to realize that, although they may be operating different types of departments, they have a common interest which requires strengthening through cooperative action.

"There have been some attempts to legislate against leased departments. These have not been particularly significant, but they may

become threatening in time. There is an opportunity for constructive public relations and trade efforts to present the favorable aspects of the leased department arrangement and we trust we may awaken interest in this direction.

"In terms of total retail distribution, the leased department is not, and is not likely to be, an appreciable factor," the speaker claimed. "Nor does the leased department have an appreciable effect in bringing about a reduction in the cost of distribution. On the other hand, there are definite functions which leased departments do perform, in enabling managements to obtain a more satisfactory return from specified facilities, and in making more completely available wanted services and wanted merchandise in adequate assortments and at fair prices."

Philadelphia Utility Starts New Generating Unit

PHILADELPHIA — Philadelphia Electric Co. has begun installation of a new \$7,000,000 generating unit in its station at Chester, Pa. Principal items in the system are a turbo-generator of 50,000 kilowatts capacity and two high-pressure steam boilers, each of 600,000 lbs. per hour capacity.

New unit as designed satisfies the preferred standard ratings suggested by the National Defense Power Committee. It will reinforce the existing capacity of the system, provide adequate reserves, and be available in the event that conditions abroad increase production requirements on local industry.



"The pulling power of Air Conditioning & Refrigeration News in producing requests for our belt catalogs is gratifying. We consider this advertising, which has run continuously in your columns for several years, an important factor in the steady increase of our refrigerator belt sales."

- M. R. Oberholzer, L. H. Gilmer Co.

Readers of the NEWS are quick to note anything new that comes to their attention. Whether it be a new product, a new improvement in an old product, a new catalog, a new finance plan, or a new display idea—if it is new it is of interest and the response is usually, as Mr. Oberholzer says, "gratifying."

Air Conditioning & Refrigeration News
"The Newspaper of the Industry"

No Funds Available For
G. & S. Tool Co. Creditors

DETROIT—Since all funds that came into the possession of the trustee for the G. & S. Tool & Mfg. Co., manufacturer of refrigeration accessories which was liquidated last year, were used in payment of taxes and wage claims, there will be no dividend to the general creditors, it has been reported by the trustee.

Money obtained in the liquidation was not sufficient to permit 100% payment of wage claims, it was stated.

G-E's Third-Quarter
Orders Increase 31%

SCHENECTADY, N. Y.—Orders received by General Electric Co. during the third quarter of 1939 amounted to \$79,510,000, compared with \$60,533,000 during the same quarter last year, an increase of 31%.

For the first nine months this year orders received amounted to \$248,582,000, an increase of 32% over the \$188,757,000 received during the same period a year ago, it was announced.

Majestic Co. Gets Loan
From W. P. Chrysler, Jr.

CHICAGO—Majestic Radio & Television Corp. has obtained a loan of \$100,000 through Walter P. Chrysler, Jr., son of the automobile manufacturer, in exchange for an option to buy 225,000 shares of Majestic stock on or before Oct. 23. Note evidencing the \$100,000 loan will be accepted in part payment of the stock.

At the same time, Mr. Chrysler has obtained a further option to purchase an additional 75,000 shares of Majestic stock, in instalments of 15,000 shares, by March 31, 1941. Allied International Investment Corp., through which the \$100,000 loan is being made, also is given an option to buy 75,000 shares of Majestic stock, and an additional 30,000 shares in instalments of 5,000, at the same price at which the stock was offered to Mr. Chrysler.

Should the option be exercised by Oct. 23, board of directors of the Majestic firm may be enlarged from six to nine members, to permit Mr. Chrysler representation.

The Chrysler transaction does not represent the turning over of control of the company to that organization, declared R. A. Lasley, president of Majestic. The arrangement is not an outright purchase, he states.

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MANUFACTURERS REPRESENTATIVE. Refrigeration engineer and sales executive with wide acquaintance among southeastern distributors and dealers of refrigeration equipment desires to represent manufacturer in the following states: North and South Carolina, Tennessee, Georgia, Florida, Alabama, Mississippi and New Orleans. Fifteen years successful selling record merits your consideration. Box No. 1185, Air Conditioning & Refrigeration News.

ENGINEERING SERVICE

ENGINEERING SERVICE for Overseas organizations covering design and manufacturing is offered to one or more non-competitive clients. Service consists of assisting to solve technical problems and regularly and automatically giving full information on new mechanical developments, manufacturing methods and machinery; obtaining samples; negotiating contracts, etc., especially in refrigeration, air conditioning, household appliances, automotive and aircraft. Over eight years continuous service to English and Australian organizations. References gladly given. Costs most nominal. Address Box 1184, Air Conditioning & Refrigeration News.

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SEND FOR PRICES and literature on the General 1940, all streamlined refrigerator display case. Over 40 years' experience manufacturing good commercial display cases. On a comparative price test with other makes of equal specifications, prices are lowest in the country. GENERAL REFRIGERATOR & STORE FIXTURE CO., 519 Bainbridge St., Philadelphia, Pa.

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EQUIPMENT WANTED

CASH FOR your coin meters. Wanted: Any quantity with 15, 20 or 25-cents-a-day gears. Write at once and advise the condition and quantity for sale. State price you expect. Address Box 1156, Air Conditioning & Refrigeration News.

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WE HAVE about one hundred Frigidaire compressors in assorted models (K-N-C-W-FW-A-etc.). These are not overhauled and are to be sold in an "as is" condition. Must be disposed of quickly. No reasonable offer refused. Box No. 1176, Air Conditioning & Refrigeration News.

BRAND NEW complete high sides; $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$ h.p. General Electric compressors with General Electric motors; Frigidaire compressors with Delco motors. Low prices, money back guarantee. MARTIN SPECTOR, 520 East 20th Street, New York City.

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HAVE YOUR patent work done by a specialist. I have had more than 25 years experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

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Service Methods

Servicing the Grunow Refrigerator Unit

How To Test Capacitor, Relay, Etc. If Diagnosis Indicates Electrical Unit Is Faulty

Editor's Note: This information on servicing Grunow refrigeration units is taken from both the official factory service instructions, and also from information furnished by men in the field who have specialized in work on Grunow units. Other instalments in this series have been published in the three preceding issues.

The subject matter is presented along two lines, one describing some of the methods of checking and servicing the unit, and the other part devoted to a diagnosis of complaints, with suggested remedies.

If a diagnosis indicates that the electrical unit is faulty the parts may be tested as follows:

THE CAPACITOR

The capacitor: The capacitor used with the "830" compressor may be tested by the following method:

1. Pull the refrigerator line cord and disconnect the leads of the capacitor.

2. By means of another line cord, connect the capacitor in series with a 25 watt 115 volt lamp to the 115 volt line. The lamp will light brightly if the capacitor is shorted, dimly if O.K., and not at all if it is open.

3. Check for ground from terminals to the can by means of a simple continuity test.

The capacitor used with the "680" compressor may be tested by the following method:

1. Pull refrigerator line cord and disconnect the leads of the capacitor.

2. By means of another line cord, connect the capacitor in series with a 25 watt 115 volt lamp to the 115 volt line. The lamp will light up brightly if the capacitor is shorted, dimly if O.K., and not at all if it is open.

3. Check for ground from terminals to the can by means of a simple continuity test.

The capacitor used with the "680" compressor may be tested by the following method:

1. Pull refrigerator line cord and disconnect the leads of the capacitor.

2. By means of another line cord, connect the capacitor in series with a 25 watt 115 volt lamp to the 115 volt line. The lamp will light up if the capacitor is shorted, dimly if O.K., and not at all if it is open.

3. Check for ground from terminals to the can by means of a simple continuity test.

The capacitor used with the "680" compressor may be tested by the following method:

1. Pull refrigerator line cord and disconnect the leads of the capacitor.

2. By means of another line cord, connect the capacitor in series with a 25 watt 115 volt lamp to the 115 volt line. The lamp will light up if the capacitor is shorted, dimly if O.K., and not at all if it is open.

3. Check for ground from terminals to the can by means of a simple continuity test.

reading, then the capacitor is shorted.

4. Check for ground from terminals to the can by means of the continuity meter.

THE TRANSFORMER

The transformer: The electrical unit used with the "830" compressor is the only one having a transformer. It may be tested by the following method:

1. Disconnect the line cord at the power supply and remove the red transformer lead from the capacitor terminal.

2. By means of another line cord, put the 115 volt line voltage on the black and green transformer leads.

3. Voltage from green to white lead should be 300 to 318 volts. If this is not correct within a few volts, the transformer ratio is incorrect or there are shorted turns in the transformer.

4. Voltage from white to red lead should be 182 to 225 volts.

5. Shorted turns in the transformer will show up in heating excessively or in poor starting of the motor.

6. The above test can be best made with the use of a small A.C. voltmeter 600 V. scale. The voltages should be within the limits given by about 5 volts.

THE RELAY

The relay: Make sure that there is power at the wall receptacle, then test the relay by the following method:

1. Pull line cord and see if the relay plunger is free to operate over a sufficient travel to touch the contacts.

2. When the line cord is connected and the overload button of the thermostat pushed in, the motor current should raise the relay to the starting position. If it does not line voltage may be below 95 volts, the main winding circuit is open or improperly connected, or the relay coil is open.

3. Check the starting contacts by shorting them to see if the motor will start. If shorting them starts the motor they should be cleaned so as to make proper contact.

4. If the plunger does not fall to the running position, there is something else wrong with the refrigerating system and the overload trip button will pop out. Refer to "Diagnosing Improper Operating Condition."

5. If the relay bounces rapidly up and down before making contact then falling to the running position, the relay is faulty.

The relay may be replaced by unsoldering all leads and removing from mounting springs. Follow the color code given in wiring diagram when replacing relay.

Correcting Restricted Liquid Line or Metering Tube

If the refrigerator runs too much, one of the causes may be a restricted liquid line or Carrene metering tube.

Allow the evaporator to warm up completely and defrost, then start the refrigerator unit. If the evaporator immediately starts to get colder and frosts up in a few minutes, it indicates the liquid line was restricted with ice. If the evaporator does not immediately get colder, the liquid line or Carrene metering tube is restricted or clogged with some foreign material other than ice.

Try to force air through the liquid line and then through the dehydrator-meter-receiver to locate the restriction. If the liquid line is found to be restricted with ice, install a service dehydrator between the condenser and the dehydrator-meter-receiver.

Diagnosing Imperfect Operating Conditions

(Continued from Oct. 4 Issue)

Complaint 9. Refrigerator Starts and Stops Too Often

A. Owner Not Properly Instructed As To Operation of Refrigerator.

The only correct way to check whether a refrigerator is starting and stopping too often is through per cent running time. Make a test over a given number of cycles. The total running time divided by the total duration of the test multiplied by 100 will give the per cent running time of the refrigerator.

Before making this test be sure that the refrigerator has been operating for some time since the door was opened and that no hot foods are in the refrigerator or that water is not being frozen. If running time is found to be too great refer to Complaint 3.

B. Check Valve Stuck Open. Refer to Complaint 3-N.

C. Leaky Float. Refer to Complaint 3-P.

D. Thermostat Tube Touching Evaporator or Header Before Bulb Contact Is Made. See that thermostat tube does not touch any part of evaporator.

E. Faulty Thermostat. Eliminate the possibility of Complaints 9-A, B, C, and D, and if refrigerator continues to start and stop more than eight times an hour with the refrigerator door kept closed, then the thermostat is faulty and should be changed.

Complaint 10. Refrigerator Excessively Noisy

A. Vibration of Suction Line. If the suction line is the cause, the noise will stop if the tubing in the unit compartment is grasped by the hand. Slightly bend or tape coils together.

B. Vibration of Any Loose Unit Parts. See that all parts such as condenser-radiator shroud, electrical cover, or air deflector are not vibrating by holding hand on each.

C. Very High Head Pressure. Place purge tool on the float or Carrene meter and read head pressure. If above normal (see chart), refer to Complaints 1-A, B, and C.

D. Overcharge of Carrene. Refer to Complaint 3-M.

E. Stuck Open Check Valve. Refer to Complaint 3-N.

Complaint 11. Odor In Refrigerator

A. Bananas, Cantaloupes, Fish, Strong Cheeses, Etc., Kept in Food Compartment. Such things should be kept in airtight bags or covered dishes.

B. Oranges Ripened With Ethelene Gas. Some oranges are ripened with ethelene gas, which gives the food compartment an odor similar to ether. Oranges should be kept in an airtight bag.

C. Refrigerator Turned Off For Longer Than 24 Hours Without Opening Door. If refrigerator is shut off for any length of time, all food should be removed and the door left partly open.

D. Washing Interior With Soap. Soap should not be used in cleaning food compartment. Use warm water and baking soda.

Complaint 12. Slight Shock Is Felt When Refrigerator Is Touched

A. Static Electricity. Reverse line cord in wall receptacle. If this does not correct condition, then reverse condenser in electrical unit box. If this does not correct condition, ground cabinet to water pipe. Underneath cabinet will be found a Fahnstock ground clip for this purpose.

B. Grounded Electrical Unit. If condition cannot be remedied by Complaint 12-A, then check electrical circuit for ground.

C. QuikKool BEVERAGE COOLERS 10 MODELS WRITE FOR CATALOG S & S COOLERS LIMA, OHIO

SYNTRON CO. 140 Lexington Ave., Homer City, Pa.

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MUELLER BRASS CO. Port Huron, Mich.

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Quillen Bros. Refrigerator Co. Indianapolis, Indiana

BUNDY TUBING Copper-Brazed Steel. Copper Coated Inside and Out. Sizes: 1/8" to 1/2" O.D.

BUNDY TUBING CO., DETROIT

Quick Method of Finding If Electrolytic Condenser Is Shorted or Compressor Stuck

Editor's Note: Following information was furnished by Jack Shinberg, former Grunow national service manager, who now operates the Grunow Factory Authorized Service Co. at Berkeley, Calif. Service men who have special questions about the Grunow may write to the News concerning them, and Mr. Shinberg will answer as many of the questions as possible.

1. Remove the condenser cover.

2. Push in the thermostat button.

3. Relay will jump up to start position.

4. Tap the relay plunger with your finger. If it drops down to running position and the compressor continues to run until you try to start it again, then the condenser is partly shorted. Replace it.

5. Tap relay plunger. If it bounces back up and will not stay down and there is no electrical flash on the relay contacts, condenser is burnt out. Replace.

6. Tap relay plunger and if relay plunger bounces back up and there is a good strong flash when you tap it, then the compressor is stuck. In this case replace compressor assembly. (Note: Mr. Shinberg's company is one of those which furnish replacement compressors.)

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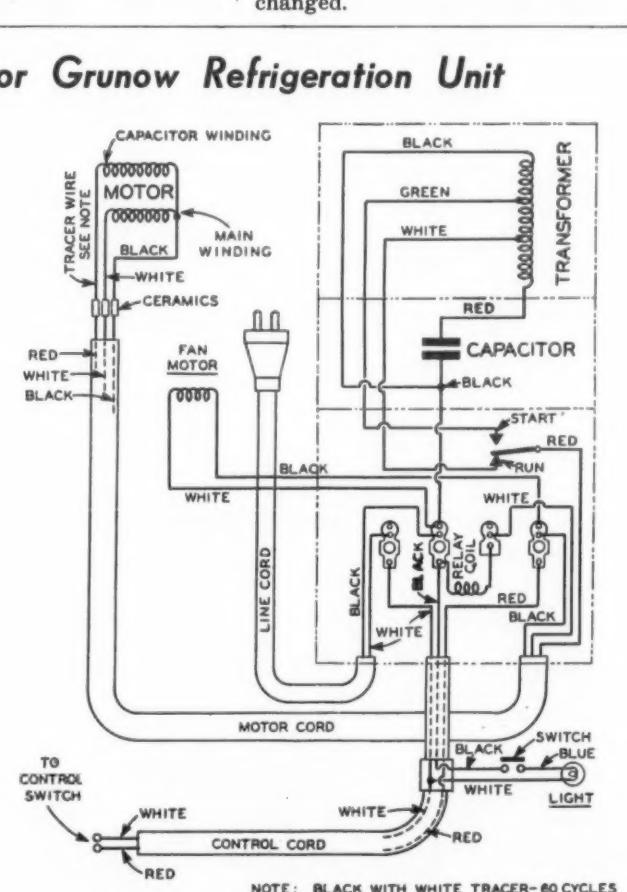
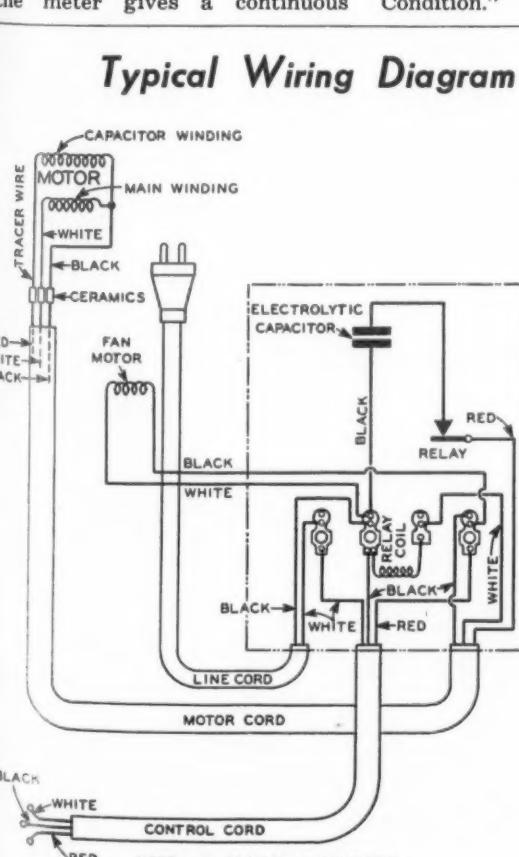
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On the left is the wiring circuit diagram for the model "M" Grunow household refrigerator unit. The circuit for the earlier models "J" and "K" units was practically identical with this. On the right is the wiring circuit diagram for the model "R" Grunow refrigerator unit. Wiring for earlier "H" model was just about the same.



Jobber Activities

Wilkes-Barre Parts Supplier Says Jobbers Must Make Selling By Servicemen Easy

By Robert M. Price

WILKES-BARRE, Pa.—The refrigeration service man is more sales-minded than the service man in any other industry. That's the opinion of B. Gerstein of Radio Sales Co., refrigeration parts jobber here, and the firm has shown an increase in business every year for five years by encouraging the service man to do as good a selling job as the service work he does.

The service man has an excellent opportunity to increase his income from the sale of parts, Mr. Gerstein believes, and the long-term satisfaction of service customers who receive improved performance from a part that needs replacing, rather than the continual headaches from a worn out part than is given first aid service means more income and a guaranteed promise of further business for the service man.

THE JOBBER'S PLACE

The jobber is the key man in pointing the way to sales by the service man, says Mr. Gerstein. To make the service man a salesman, he must be supplied with a complete line of parts, and he must be given prompt service on supplying the parts. To encourage them to sell without a ready source of supply is defeating the purpose, he pointed out.

Belt Sales Helps Made Available By Gilmer

PHILADELPHIA—New belt merchandiser for jobbers just announced by L. H. Gilmer Co. is the "Eye-Ful Tower," displaying an assortment of 35 belts in popular sizes and featuring a "Handimeter" for figuring belt sizes.

The "Handimeter" is a slide-rule type of measurer that gives the width and length of any V-belt up to 75 inches long and between $\frac{1}{8}$ and $\frac{1}{4}$ inch wide. This includes the majority of belts for small drives.

The "Eye-Ful Tower" is a circular stand of sturdy wire, finished in dark blue. It is 15 inches in



diameter at the base, 32 $\frac{1}{2}$ inches high, and has a capacity for 70 belts.

Perpetual inventory card fits in the frame back of the sign, to provide a handy method of keeping record of belt stock.

The merchandiser assortment consists of 35 belts, chosen for use on refrigerators, stokers, oil burners, pumps, compressors, and other small drives. Gilmer catalog and window color sign are included. The assortment is cartoned, ready to set up.

"We have what they want—when they want it," Mr. Gerstein explains, "and we have made that the working purpose of our business."

That does not mean, however, he cautioned, that the jobber must stock to the roof with every make of part, that the service man may call for.

There is no duplication of lines of parts where it can possibly be avoided. The jobber should pick a good line, as few makes of parts as possible, and then sell, really sell, these lines to the service men, Mr. Gerstein feels. Duplication, he says, builds up the inventory unnecessarily, and with many lines neither the jobber nor the service man can do a convincing selling job. "Do a superior selling job on the line you are convinced is the best," he advises.

KEEPING AN INVENTORY

To keep the inventory up to the policy of giving the service man what he wants when he wants it, this jobber keeps a close day-to-day check on his stock. Every part is kept in a convenient drawer or shelf marked with an identifying number. These numbers are cross indexed with parts catalogs. If a supply of a certain part is needed, a daily check of the catalog and the number reveals the stock on hand. The orders for new parts can be taken from this source and is an absolute check on inventory. New parts are added to the stock when repeated calls warrant it. Even though the firm will get the service man any part he wants, effort is made to keep him buying the lines carried.

The sale of replacement parts is discouraged as much as possible by this jobber. Even though some parts might be worth replacing, they represent a loss to the jobber and the service man in the long run, says Mr. Gerstein. To avoid these losses, every call for replacement receives special attention.

The part is thoroughly checked, and if, in the opinion of the jobber, the part is not worth fixing, the service man is told that frankly. The service man is advised not to waste valuable time, postage, and money in trying to get the part replaced. Get a new part, he is advised.

This advice goes back to the firm's main idea of encouraging the service man to sell wherever possible, and to sell the best. "To practice what we preach," Mr. Gerstein said, "we carry no salvage or off-hand merchandise."

The firm goes out after business in the same manner. An outside salesman scouts new accounts and keeps after established ones. Each new service customer is not only sold parts and supplies, he is sold on the idea of selling.

Sterilizing Lamp New G-E Development

(Concluded from Page 1, Column 5) General hospitals are experimenting with the lamp to sterilize circulated air and to form a germ-killing curtain with its rays over cubicle entrances to protect patients from cross-infection.

Dr. L. R. Kollar, research scientist, explained that other possible uses for the lamp included sterilization in cosmetics manufacture, and in food industries.

Decay From Field Heat Spurs Farm Storages

(Concluded from Page 1, Column 4) fruit went into storage at a lower temperature, and the peaches kept better. There was a definite problem of "field heat" this year, as peaches were placed in storage at temperatures of from 80 to 95° F.

As the field heat in the peaches made it impossible to halt the ripening process immediately, many peaches became soft and had to be withdrawn from storage within a few days. Growers feel that owners of cold storage plants should build pre-cooling chambers where the field heat can be removed before the fruit is placed in storage.

Growers of Bartlett pears complained that heat from the peaches going into warehouses where their No. 1 pears were stored raised havoc with their fruit.

14 Cooling Contractors Pass N. Carolina Tests

(Concluded from Page 1, Column 3) C. G. Hartsfield, Greensboro; W. E. Kistler, Raleigh; W. C. Kline, Waynesboro, Pa.; Gordon Smith, Jr., Durham; L. E. Marque, Charlotte; Alton Skinner, Jr., Durham; S. A. Sigler, Greensboro; R. M. Warren, Jr., Charlotte; C. C. Donovan, Winston-Salem; E. C. Harper, Salisbury; G. P. Patterson, Greensboro; H. G. Polhig, Henderson; and H. L. Goodwin, Greenville.

Nurses will work in four-hour shifts, keeping constant records of patients' temperature, pulse, and respiration. Patients will be chosen from a long list of applicants, and will be treated two at a time.

While assured of at least two years' work, the hospital hopes that the investigation can be carried on for the full five years considered necessary to fully determine the treatment's value.

'Frozen Sleep' Treatment For Cancer To Be Studied In N. Y.

(Concluded from Page 1, Column 3) perature is reduced from normal 98.6°, to 91° by packing the body—excepting hands, head, and feet—in ice. When the patient's temperature reaches 91°, the ice is removed. Experience indicates that the patient's temperature will continue to drop until it reaches 88 or 89°, and that it is generally about five hours before body temperature comes back to normal.

Treatments and observations at Lenox Hill will last from one and a half to five days. First treatment will be for 36 hours in the air-conditioned room, after which the patient will be returned to his own room for observation. After two or three days, he will again return to the refrigerated room for a second treatment, this one for 72 hours duration. Third treatment covers a period of from 96 hours to five or more days. Temperature of the "hibernation" room will be maintained at from 58 to 65° F.

Nurses will work in four-hour shifts, keeping constant records of patients' temperature, pulse, and respiration. Patients will be chosen from a long list of applicants, and will be treated two at a time.

While assured of at least two years' work, the hospital hopes that the investigation can be carried on for the full five years considered necessary to fully determine the treatment's value.

Detroit ASRE To Discuss Air Conditioning Code

DETROIT—The proposed air-conditioning code for the City of Detroit will be the subject of discussion by members of the Detroit section of American Society of Refrigerating Engineers at their first dinner meeting of the 1939-1940 season, to be held at 6:30 p.m. Oct. 12 at the Lee Plaza hotel.

Presenting the proposed code will be George F. Emery, chief building inspector of the City of Detroit. Discussion will follow Mr. Emery's presentation.

Other city officials who have indicated their intention of attending the meeting are Joseph P. Wolf, Commissioner of the Department of Buildings and Safety Engineering; H. H. Mills, chief safety engineer; and E. H. Sullivan, assistant chief building inspector.

Reservations for the affair are being handled by Sidney A. Whitt of Nash-Kelvinator Corp., chairman of the entertainment committee of the local A.S.R.E. section. George F. Taubeneck of AIR CONDITIONING & REFRIGERATION NEWS is chairman of the program committee.

Named G-E Press Man

NEW YORK CITY—H. J. Deines has been named publicity representative for General Electric's New York district to succeed B. J. Rowan, recently appointed assistant to C. H. Lang, manager of the publicity department in Schenectady.

● The Weber Showcase & Fixture Company, like many other famous manufacturers of commercial cabinets, has found A-P Valve Dependability the best assurance of service efficiency on all types of refrigeration.

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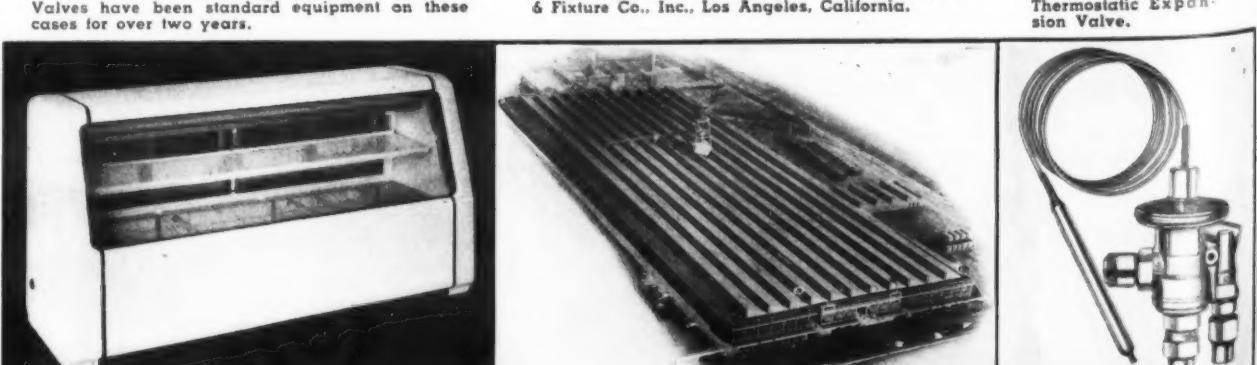
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